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ABSTRACT

The Seventh Annual Conference of the North East Association for Institutional Research (October 30-November 1, 1980) proceedings are presented on the conference theme, "Institutional Research in the Decade Ahead: Enhancing Performance." Thirty papers are contained in their entirety on topics including: the American university and its publics; students' college choice; the relationship between college, students and parents; marketing higher education; program evaluation; assessing quality and excellence in higher education; admissions and retention; enrollment trends; adult learners; returning to the basics in curriculum; the Course and Section Analysis data system (CASA); institutional research and the budget development process; financial feasibility models; the factbook; financing higher education; the nontraditional student; the effect of union exclusion; faculty salaries; resource allocation; faculty development; faculty workload; and educational goals implementation study. The appendix provides the complete conference program. (LC)

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Institutional Research in the Decade Ahead: Enhancing Performance

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North
East
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N E A I R

Seventh Annual Conference
North East Association for Institutional Research

October 30 - November 1, 1980

Amherst, Massachusetts

HE 014 001

INSTITUTIONAL RESEARCH IN THE DECADE AHEAD: ENHANCING PERFORMANCE

Papers from the Seventh Annual Meeting
of the
North East Association for Institutional Research

Amherst, Massachusetts
October 30-November 1, 1980

PREFACE

The Seventh Annual Conference of the North East Association for Institutional Research was held October 30 - November 1, 1980 at the University of Massachusetts, Amherst, Massachusetts. The conference theme, *Institutional Research in the Decade Ahead: Enhancing Performance*, was highlighted by Hugh Hawkins, Professor of History and American Studies at Amherst College. His keynote address was entitled: The American University and Its Publics: A Historian's View.

The formal conference, attended by 137 people from eleven states was preceded by three optional seminars focusing on Institutional Self-study, Attrition and Retention, and Market Research in Higher Education. There was also a demonstration of the EDUCOM Financial Planning Model (EFPM). A copy of the conference program is included as an appendix to this publication.

Topics covered in the regular sessions included student choice, program evaluation, assessing quality, attrition/retention, and faculty workload. A variety of papers were presented on other special interest topics. The papers included in the Proceedings are those submitted for publication, and do not cover all the presentations that were made at the conference.

The Association is grateful to Patrick Terenzini and Wendall Lorang (SUNY, Albany), who co-chaired the Conference Program Committee. The Local Arrangements Committee was chaired by Bill Lauroesch, who was ably assisted by Larry Benedict (University of Massachusetts at Amherst).

The success of the conference was due also to the efforts of the many participants who shared their research successes, as well as frustrations.

The final form of the publication is the result of the patience and editorial skill of Helen Rock of the Office of Institutional Research at SUNY Plattsburgh.

Diana M. Green
NEAIR Publications Chair

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THE AMERICAN UNIVERSITY AND ITS PUBLICS:

A HISTORIAN'S VIEW

Hugh Hawkins
Amherst College
Amherst, Massachusetts

Those who invited me to speak here did so, as I understand it, because I am not one of you. Reflecting on this notion, I have been startled to think of the gap, possibly even the polarity, between us.

You are institutional researchers. I am a historian. You gather data and analyze it for policy questions. I gather data and try to synthesize it out of some notion that knowledge of the past is good in itself quite apart from any potential utility.

You are sophisticated in the ways of statistics and computers. I work mostly with so-called literary sources, looking for assumptions concealed in the record of the past and looking for the ironies that divide intentions from achievements.

Most startlingly, we are subject matter for each other. I am one of your FTE's. I am part of the denominator of the student-faculty ratio that your chief may be trying to enlarge. You, in turn, are prime examples of the elaboration of administrative structure which forms a principle theme of my history, a development I hold up to close scrutiny because I see danger of institutional purpose getting lost in institutional rationalization.

Yet I think division is not the whole story. We both center our working lives within the world of higher education. Your various reports will be the stuff of the history that some future historian will write. The historian, who could be I, will consult your questionnaire results, preserved long after those who answered the questions have left the scene.

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We both care about change, even though I look more to the changes in the distant past that moved things toward where we are today, and you look more to changes in the immediate past with a concern about where we may be in the future and how we might get there. Since I will be sharing that future, and since you cannot escape that past, we surely have a great common realm of interest. My being here tonight is evidence of our mutual recognition of what we share. I am immensely grateful to those who invited me.

Much of my written history has focused on rather brief periods of the academic past. I was trained in the school of thoroughness, with its careful reliance on primary sources. I welcome the chance this occasion gives me to sweep with a little more daring across a broader expanse.

I have lately been trying to shift my scholarship from studies of single institutions to studies of higher education as a whole. Accordingly, I am having to change my methods and my sources. But I have found that I still care about the same central question. What has happened to the purpose of higher education as it encounters the rest of society? Or, in the language of my title, as higher education encounters various publics, what have been the stakes?

I will be contending here that in this encounter with their publics, the greatest strength of our colleges and universities has been their flexibility. And their greatest weakness has been--the same thing. I call flexibility a strength, because in any society, but particularly in one like ours--fiercely democratic, confidently materialistic, assured of its moral probity--institutions have either adapted or they have weakened and disappeared. I call the same quality a weakness, because in their efforts to adjust to America, colleges and universities have often compromised what should be their essential purpose--the life of the mind. The essential of that life is free inquiry. And if the universities are not true to the possibilities of the human intellect, those possibilities are almost certain to be neglected.

In short, I see universities as often teetering between a self-satisfied, narrow intellectualism and a surrender to external powers.

This tension was present 100 years ago in the revolutionary changes that made the post-Civil War era the most important in our academic history. To understand that revolution we must identify the pattern that was being changed--the old-time college.

American higher education in 1840 consisted of about three hundred such colleges, none with more than 200 students,--all of the masculine gender--none offering education beyond the bachelor's degree, and all dedicated to a program that emphasized required study of the ancient languages and mathematics, with only a smattering of other subjects. For the students, life was rigidly prescribed. Faculties were often made up of young men waiting to launch a different career, and older men who found the ministry too demanding. It was an intimate, face-to-face community, where those in charge thought of themselves as acting in the place of parents. The personification of these impulses was the president of the institution. Almost certainly a clergyman, he was never so happy as when a revival "freshened" his college and it seemed appropriate to call off classes while the work of salvation went on.

At our distance from the old-time college, we can easily identify certain positive values, and it had many qualities that we complain are lacking in the huge organizations that constitute universities today. But to many of those who had attended these institutions in the early 19th century, they were remembered as little short of a national disgrace. If Europe had universities, they reasoned, then America could not hold up its head until it had them too. Their allegiance to the republican form of government made them eager to prove that monarchs were not the only ones who could charter these great centers of learning.

It took the Civil War to free the forces that brought universities into being in the United States. The enhanced nationalism and liberalism that went with the Union victory, the new fortunes created by a triumphant industrialism, and the original hopeful connotations of the term "Reconstruction"--all these encouraged the establishment of universities.

A series of institutions took their turns as the center of hope and attention, and each contributed something lasting to the institutional pattern that I have suggested proved so flexible.

First, think of Cornell University, which opened in 1868 in western New York. It was inspired by the grants of land which Congress provided under the Morrill Act of 1862, so that each state could support a college emphasizing branches of learning "related to agriculture and the mechanic arts." Two members of the New York legislature--a wealthy Yale graduate named Andrew D. White, and a wealthy graduate of the school of hard knocks named Ezra Cornell--dreamed up a plan for keeping the New York grant united for one institution, and holding onto carefully selected lands until the price rose. Meanwhile, Cornell would give his farm and his fortune to endow the new university. It took for its motto his statement: "I would found an institution where any person can find instruction in any study."

And what a complicated mixture it all was! Cornell was both privately endowed, and public-land-grant supported. It offered not only agriculture and engineering, but the classics and fine arts. It included a Voluntary

Labor Corps, because Ezra Cornell believed every student should learn a trade. It admitted women as well as men, and it tried to be open to influences of all denominations without being controlled by any. It included an elective program, under which students were allowed to choose practically all the courses they took. In short, it was a scandal. But it was also a triumph. In 1871 its freshmen class was larger than had ever been seen at an American college. This vote of confidence by students and increasing interest by industrial magnates made it the talk of the academic world and a model that older institutions ignored at their peril.

One university leader who did not ignore it was Charles W. Eliot, who was inaugurated as president of the country's oldest college--Harvard--in 1869. The choice of Eliot for this post was in itself revolutionary. He was the youngest president Harvard has ever had--only thirty-five. He was the first not to be a clergyman. In fact he was, of all things, a chemist, and he had been teaching at a very unclassical place--the Massachusetts Institute of Technology. He was one of those who dreamed of creating an American university that was oriented to social needs. Shortly before he took office, he had written: "[The American University] will not be a copy of foreign institutions, or a hot-bed plant, but the slow and natural outgrowth of American social and political habits." His inaugural, which left no doubt that the old Harvard was going to change, emphasized the two programs in which he attained his greatest success: the elective system, by which, increasingly, students could design their own course of study; and reform of those long neglected appendages of Harvard College--the professional schools. In his first few years, he fought to get the doctors at Harvard Medical School to transform its hasty, income-oriented curriculum into an extended program that included clinical experience. Before he was finished (and he stayed in office for forty years), Eliot had elevated Harvard's professional schools to the postgraduate level. It is these two changes--undergraduate curricular freedom and elevated standards of professional training--that were Eliot's lasting contributions to the complex new American university.

But even with Cornell and Harvard succeeding in their experiments, something was lacking. White and Eliot had been too eager to meet the country's utilitarian demands. At least, so said those who felt that the German universities were the best in the world. Students who wished to pursue non-professional, non-applied knowledge beyond the level of the B.A. degree found virtually nowhere in America to go. And the university professor was still primarily a pedagogue. If he was also a creative scholar, it was almost by accident. A righting of the balance by emphasizing knowledge for its own sake came through a university that opened in the nation's centennial year, 1876. A merchant of Baltimore named John Hopkins left half his fortune to found a university, and his trustees discovered that an ambitious educational reformer named Daniel Coit Gilman was willing to leave the University of California after three years as president there.

Gilman told the trustees that he would head the John Hopkins University if they were willing to break the old pattern and aim at attainment of a higher level of education--in short, to stress what we now call "graduate education." He envisioned a faculty of intellectually adventurous scholars, whose publications gave them more than local reputations. The trustees assented, and Gilman set to work. Perhaps most importantly, he instituted a new program of "fellowships," to pay college graduates to pursue advanced studies. The caliber of Hopkins' work gave a new prestige to university professorships and to the Ph. D. When the Association of American

Universities was formed in 1900, only institutions with Ph. D. programs were admitted.

These three men--White at Cornell, Eliot at Harvard, and Gilman at John Hopkins--are the traditional heroes in America's academic legend, and the legend is essentially accurate. Their restructuring of American higher education was widely imitated, and it gained a spectacular confirmation in the founding of the University of Chicago in 1892. Here the financing represented a blend of John D. Rockefeller's oil fortune, gifts from local businessmen, and the urge of the American Baptists to sponsor a great educational foundation. Under President William Rainey Harper, an Old-Testament scholar with a talent for organization, the University of Chicago ratified and united the practices that had emerged from the earlier experiments. Chicago offered what Americans had come to expect in a "university": curricular inclusiveness, advanced study, research-oriented faculty, a cluster of professional schools, and a hierarchy of ranks for faculty and degrees for students. But Harper added something new--a highly rationalized administrative structure. This structure resembled the developments in business management which had accompanied the consolidation of American industry.

While the University of Chicago was establishing itself as a symbol of the full-realized private university, another group of institutions was slowly coming into its own. I refer to the state universities (and the overlapping category of land-grant colleges) which were often constrained by the limits of state budgets, by the sometimes narrow views of state legislators, and by being considered the final step on the ladder of public education, not much different in purpose from the high school. To their credit, state universities opened possibilities of extended education to young people who lacked both money and a family tradition of advanced education, and Western state universities were path-breakers in instituting coeducation. They did this at a time when many educators were issuing dire warnings of female fragility, insisting that women's bodies were not tough enough for them to engage vigorously in the life of the mind.

Gradually, the most ambitious state university leaders raised standards to those of the private pace-setters. The Hatch Act of 1887 gave them funds for agricultural experiment stations, and the research impulse spread to non-applied programs. But it was other developments that put state universities center-stage during the early years of the 20th century. I am referring to those programs that can be loosely grouped under the label "the Wisconsin Idea." By no means unique to Wisconsin, this formula took the university outside the campus and--in the phrase of one president--made "the boundaries of the university coterminous with the boundaries of the state." This was done through such undertakings as extension programs that sent university professors to isolated communities to give evening courses, soil testing laboratories to help farmers, and special "institutes" that brought older people to the campus for brisk, short courses.

Under another phase of the Wisconsin Idea, universities furnished experts to legislators trying to frame laws for a complex industrial society, and professors became members of new government regulatory boards. The Wisconsin Idea was oriented to "service," as the language of the day had it. And the voters were far more willing to tolerate the incomprehensible publications of a professor of Sanskrit when they recognized that he was in the same institution as the man who had found a successful cure for wheat fungus.

But I fear that the story, as I am telling it, is beginning to seem all devoted to the inspired flexibility of American universities, and you may have begun to wonder if there is a case to be made for those dangers of corruption that I spoke of.

The early 1900s is the ideal period to bring some of the less cheerful side of the story to the fore, since during these years, two largely distinct rebellions by faculty members surfaced. The first, I will label the rebellion of the humanists. This attack on the new status quo stressed the neglect of undergraduate training in the liberal arts. These critics complained that the elective system had reduced all subjects to equality, whereas some subjects were vastly more important to true education than others. Professor Irving Babbitt feared that the B.A. degree might come to mean simply that a student had "expended a certain number of units of intellectual energy on a list of elective studies [and] that [list] may range from boilermaking to Bulgarian." He and others harked back to the best of the old-time colleges and pointed to the practice in English colleges. Both these models were called truer to liberal culture than those huge successes, the new American universities. What should the university give to students who come at the age of 18 asking for education? To these reformers (or perhaps they should be called counter-reformers), the answer was this: we should open their minds to "a wide vision of the best things which man has done or aspired after." This would be the opposite of imparting masses of undigested or unjudged facts, or teaching mere techniques. These advocates of a more truly liberal culture found leaders in such figures as Woodrow Wilson, president of Princeton, and A. Lawrence Lowell, who succeeded Eliot at Harvard in 1909. Colleges now began to limit the free elective system by requirements that students have both breadth and depth--that they know something about a great many fields, and a great deal about some particular field. If these critics of American universities were sometimes crochety, and sometimes offensively elitist, they at least drew attention to a certain cheapening of higher education. They gave fresh purpose to many small colleges, but in the universities, their success was limited.

The second rebellion, which is analytically distinct, though it involved some of the same people, can be called the revolt for professionalism. Professors insisted that the rubric of "service" diverted their teaching and research from higher ideals of free inquiry. They resented the prevalence of business values in universities, and they particularly complained of the concentrated power in the administrative bureaucracy. It was all right to keep track of statistics, but was there not a danger that what Professor Thorstein Veblen called "visible magnitude" would become the institutional goal, replacing intellectual achievement, which was unmeasurable? As to the university presidents whom Veblen satirized as "Captains of Erudition," were they not exercising arbitrary power, firing professors they did not like and turning others into toadies, who played it safe in their writing and teaching? With increasing vehemence, professors insisted that they were not employees of the trustees, but rather were professionals. This professionalism, like that of doctors and lawyers, meant that their judgment was based on expertise and ethical commitment, and that their judgments must remain essentially independent of those who might be called their "clients,"--students and the public.

This impulse was most clearly institutionalized in the founding of the American Association of University Professors in 1915. From the beginning, it helped teachers who were in trouble because of their opinions. The idea of tenure, which had earlier origins, was developed into a firm institutional commitment that made it less likely that unorthodox thinkers would be forced out. Now, having suggested that participants were not without qualms about the price universities were paying for success, let me resume my chronicle.

In the testing of World War I, the universities were given over to the ideal of service in a form so nationalistic that it nearly obliterated other ideals. The armed forces were given anything they asked in setting up training programs on campuses, researchers turned without hesitation to such projects as the perfection of poison gases, and advocates of academic freedom stayed quiet while professors of German birth or suspected of pro-German leanings were harried from their jobs. The war was mercifully brief, but much of the damage could not be undone. Besides, the postwar period saw an influx of students that strained all facilities, and inflation made adjustments more difficult.

The 1920s were the first great era of fund drives. They tended to be successful, benefitting from alumni's concern for their alma mater, a relationship largely unknown in Europe. They benefitted also from the gifts of great foundations, especially those of Carnegie and Rockefeller. Since universities were sharing in the prosperity of American business, there were occasions when presidents and professors discouraged social criticism. New utilitarian programs served business more obviously than they served learning. In the Veblenian tradition, muckrakers like Upton Sinclair exposed truckling to commercial interests, and Abraham Flexner, himself a power in the foundations, denounced the university's descent into a "service station" mentality. Visually, there was evidence in the new fraternity houses and huge sports stadiums that the center of institutional gravity did not rest on intellectual concerns.

The Great Depression challenged business hegemony and brought a new seriousness to the inner life of universities. Students accepted federal grants under NYA, happy to keep the library books dusted or take other makeshift jobs that let them stay in school. Economics courses were in vogue, and field projects brought students close to union organizers and helped them feel that they were not hiding in an ivory tower. As for the professors, their role in Washington as Brain Trusters can be interpreted as the Wisconsin Idea gone national. There was an understandable conviction that the university must help in this national crisis as it would in a war. One can sympathize with these impulses, and still suggest that such tendencies worked against the more leisured sense of the university as a home for untrammeled learning and self-directed inquiry. Yet ironically, the very dismalness of the economic situation led to some important experiments in revivifying higher education. At the University of Chicago, the boyish new president, Robert Maynard Hutchins, felt that since fund-raising was hopeless, he might as well devote his energies to curricular innovations, such as the Great Books courses, earlier admission of bright students, and an assault on the anti-intellectualism of those who defined education as adjustment. With similar daring, though in a different setting, a group of faculty and students at Black Mountain College in North Carolina experimented in communal living and student government, scorning the judgment of accrediting agencies.

Perhaps more important than any indigenous development in American universities during the 1930s, was the influx of refugees from fascism, who included many of Europe's most advanced thinkers. They brought with them a dedication to the research ideal that had scarcely been matched since the early days of Johns Hopkins. There were so many such refugees that most colleges and universities could count at least a few. The result was a major injection of cosmopolitanism and a renaissance in certain fields.

After December 7, 1941, the universities--like the rest of the nation--were, as President Roosevelt announced, under the command of Dr. Win the War. Colleges were glad to invite the military in, seeing the only alternative as closing down for the duration. Ironically, it was at the University of Chicago, home of Hutchins' puristic intellectualism, that the most momentous "service" effort in university history was undertaken. In secret laboratories under the football stadium, scientists worked to perfect the device whose very success was to give them pause when they tried it out at Alamogordo in July, 1945.

Just as the Morrill Act during the Civil War continued to affect universities long after that war ended, so the GI Bill of Rights instilled the lasting expectation that higher education should be much more generally available. At the end of the war, numbers of students found themselves in college who had earlier believed they could not afford it. Colleges got a financial shot in the arm, and the President's Commission on Higher Education proposed that two years of college be added onto the national tradition of free, universal public education. In spite of the drive to create community colleges, the majority of college students found themselves in very large institutions. Some began to complain that they were only faces in the crowd, or worse, coded symbols on a computer card.

With the onset of the Cold War, many felt that the situation justified an unquestioning total commitment to the nation. Fears increased that the Russians were succeeding better in education than we were. After all, had they not developed atomic weaponry with astounding speed, and did they not humiliate us in the space race by launching their Sputnik for the whole world to see? Americans responded with an exaggerated emphasis on the applied sciences, insistence that traditional humanities were frills, and declarations that the sooner students knew where they were headed, the better. In a word, vocationalism invaded the universities as never before. New federal aid to higher education became available. But as colleges had already learned in their experiences with fund drives, those who pay the piper can at least claim a veto over the tune. The National Defense Education Act defined even so humanistic a field as foreign languages as a tool in preserving America's world power. Grants for secret research were accepted, and professors found themselves voting on Ph. D. degrees in cases where they had not been able to read the dissertation because it was classified.

On the one hand, these tendencies were corrupting. They represented the "service ideal run wild. Universities became so vast, so multi-faceted, that Clark Kerr could find coherence only in their administrative structure, and coined a new name for them--"multiversities." Yet, as in earlier cases, I think a central thread of intellectual integrity was preserved, perhaps even strengthened. During the fifties, the word "excellence" came into wide use. If at times it was a mere slogan, it did reflect a changed attitude toward intellectual attainment. Those former greasy grinds, the hardest-working students, found a new respect. Teachers were more willing to be blunt in identifying slipshod intellectual effort, and the better students often entered Ph. D. programs rather than law school or medical school.

The first important disruption of this newly prosperous and increasingly self-satisfied academic establishment was the student revolt of the late 1960s and early 1970s. To the extent that student rebels got what they were asking for, they kept the university in its old dilemma. They drove military research out of some institutions, but they initiated other kinds of "outside involvement" through various radical and reform causes. They managed to soften some of the mechanical impersonality of the campuses and encouraged the admission of a broader range of young people. Those changes were badly needed, but they did contribute to a lowering of intellectual standards. The student movement with its call for "relevance" sometimes proved to be as distorting to truth as earlier calls for "service." In retrospect, however, that movement seems less institutionally significant than it did at the time.

What can I say of the last few years? Its mood can perhaps best be summed up as an awareness of limits. The national failure in Vietnam, the reminders of the exhaustibility of natural resources--in particular the energy crisis, stagflation, foreshadowings of enrollment decline--all of these have encouraged somberness, even gloom. Respectable small colleges have been dying, and many institutions have embraced shallow vocationalism in an effort to attract students. Endowment income is down, and taxpayers are pressing for rollbacks. Programs are trimmed or scrapped. But a sense of limits is not the same as despair.

Acknowledging limits is another way of saying that universities cannot do everything. They cannot say to every center of power in the society, "Yes, we are as you desire us. Just tell us what you want." Instead, let universities consider priorities. To do that, they must ask what essentially justifies their being.

As I tried to make clear earlier, I am enough of an old-fashioned functionalist to think that institutions have callings, and that the calling of higher education is the creation and sharing of knowledge. Higher education does not perform this function all by itself, and it is not the only purpose it can reasonably serve. But this is the role to which it should be committed.

There is always danger of higher education's indulging in purism and self-righteousness. It can, as it were, say to the rest of society, "We take care of the mind. You take care of the meat and potatoes." Indeed, there is no monopoly on intellect in colleges and universities. What Jacques Barzun called "the house of intellect" is shared by libraries, museums, industrial laboratories, research institutes, newspapers, television, publishing companies, and others. But there are distinctions that set colleges and universities apart among knowledge-oriented institutions. Most importantly, they bring youth and maturity together, and they command sustained attention from participants. Students and faculty share time and place long enough that intellect can come to be not just a convenience, or a utility, or an entertainment, or a curiosity. Here the life of the mind can be recognized as the demanding and rewarding and collaborative human enterprise that it is. Students will almost always be concerned about finding and preparing for their vocations, as well they should at their stage of life. But if that search and preparation are not placed in a larger perspective of human achievement and human possibility, then higher education has prostituted itself.

And what of research? It is a lonelier pursuit, and to speak the truth, it does not always sit well with the duties of teaching, though the tension here can be a healthy one. If teaching can distract from creative scholarship, so can the hopes of practical or profitable application of research findings. According to Monday's New York Times (October 27, 1980), Harvard University has a plan under consideration that would make it part owner of a new corporation. The corporation would seek to exploit the university's patents which are based on recent faculty research in recombinant DNA. To Harvard's credit, some of the planners have raised questions. What happens to free inquiry when it becomes financially beneficial to keep a discovery secret? How will decisions about faculty promotion and retention be affected? A candidate's contribution to this money-making enterprise could hardly be ignored. Such questions, it seems, are being relegated to the faculty "for study," but time is short. I am reminded of the sad case of Columbia University's plan to enrich itself through ownership of a cigarette filter patent. Harvard's enterprise may well prove profitable, as that one did not. But no matter how great, such profits cannot outweigh the cost to the university's essential purpose of free inquiry.

I have brought this account up to today to suggest continuities, even though I know that historians who write history up to the present run the danger of partisanship or polemicism. Usually we keep a discrete distance and talk about sources not being open.

You in institutional research are different. You seize the day. In fact, as I suggested earlier, part of what you are working out is what historians are waiting for.

Perhaps there is something the historians can offer you in recompense. Not nostalgia. Not the dead hand of the past. What is offered is perspective. Where has this institution we study come from? Amid all its changes, has there been continuity? I have contended here that the central purpose has been continuous, and I name it once more: the increase of knowledge and the decrease of ignorance.

AN ANALYTICAL FRAMEWORK FOR THE INVESTIGATION OF THE STUDENT'S COLLEGE CHOICE DECISION

Frederick L. Dembowski
Assistant Professor of Educational Administration and Policy Studies
State University of New York at Albany

In the face of decline in the general student population, higher education institutions must compete with one another to obtain a viable freshman class. The burden of this task typically falls on the Admissions Office of the college or university. The admissions office staff has the job of marketing the institution in such a manner as to attract those students possessing the attributes and characteristics deemed desirable. Usually the attributes include high SAT scores and a high rank in class, etc. Besides attracting these highly qualified students, the admissions office must also be concerned with the targeted size of the entering class. Thus, the admissions office may accept all students of a given level of quality who apply for admission, but depending upon the number of applicants that accept the admission offer, the targeted size may or may not be attained. If too few students accept, the institution may be forced to make budgetary cutbacks. If too many students accept the admission offer, the class load will be large, possibly causing staff or space problems.

The problem then is to develop a method that would enable the admissions office staff to predict whether a student will enter the institution if offered admission. This paper will describe the formulation and empirical analysis of a model of this student/college choice decision. While there have been several econometric analyses of the student demand for higher education, none of the studies attempted to estimate the probability of whether a student will accept an offer of admission. This paper is organized as follows. First, a description of the student college choice decision process will be described to determine the variables requisite for a model predicting student college choice. A theoretical model of the student college choice will then be proposed, followed by an empirical analysis of the model of the student college choice decision. The paper is concluded with a discussion of the applicability of the model, with a summary of results.

A Model of the Student College Choice Decision

This research was undertaken with the intent of developing a model capable of predicting the probability of a student entering a particular college once he has been admitted. For example, assume the Admissions Office of Midcity College is interested in predicting whether a student will accept an offer of admissions. There are three basic decisions a student makes in determining the college choice. First, the student has to decide the colleges to which he will apply. Presumably, by the time he has received offers of admission, he has completed this process. Next, the student has to determine what colleges he will go to for participation in the various admissions process components such as an interview with an admissions counselor, a talk with a faculty member, a campus tour, etc. Some students do this before they submit applications, and based upon these experiences, they decide where they want to submit applications. Others, however, undertake this process after being offered admission and before they accept the admission offer. Thus, these admissions process components affect the ultimate college choice decision.

This ultimate college choice decision is the choice of college that the student enters. By the time the students have received an offer of admissions from Midcity College, they also received offers from other colleges as well. In making the college choice decision, the student compares the strengths and weaknesses of the colleges that offered him admission. However, from the Midcity College point of view, the admissions office does not know what other colleges also offered the students admission, but, through the admission forms, it is often known where else the students have applied. Thus, it is possible to construct a student college choice set of the other colleges to which the student has applied and to compare the characteristics of these colleges with Midcity College. With the present state of the art, it is not possible to construct a separate choice model that would yield a probability of the student going to each of the colleges he applied to, but it is possible to construct a model that would yield a probability of the student entering the Midcity College versus some other college to which he also applied. This type of approach would compare the average characteristics of the other colleges the student applied to with Midcity College. In deciding what college characteristics are important in helping the student make this college choice decision, a heuristic approach was used. It is generally known that students use many published college guides, which contain many vital statistics of the colleges in the United States. For examples, Peterson's Guide (1975) has listing of college characteristics such as total enrollment (graduate and undergraduate), freshman enrollment, the number of faculty, the number and types of majors, the percentage of students that receive financial aid, and the tuition for each college. Astin (1971) gives the average ACT and SAT scores of the entering class of each college. Using these guides, the student is enabled to pick the college that most closely matches his interests and needs. Thus, in this model of the student's college choice decision, the average score for each of the above characteristics obtained from the set of other colleges that the student applied to, will be used to estimate the probability of entering Midcity College versus entering one of the other colleges in that student's college choice set.

Midcity College has an admissions process to which students may avail themselves to become acquainted with the suitability of the college to their needs and interests. This admissions process at Midcity consists mainly of school visits interview, talks with faculty members, campus tours, and an Open Campus Program. Past research has shown that all of these process components have an impact on the student's decision to enter the college. Accordingly, these components should be included in the model.

Finally, it is obvious that the students have different characteristics, backgrounds, and needs. Some of these characteristics should be included in the model because they affect the college choice decision. These include the student's income level, place of residence, sex, SAT scores, type of high school attended, rank in high school class, and some indication of their special interests, such as an interest in medicine or some other health related career.

The model of student's college choice as outlined above will consist of three basic components, formally written:

$$E = f\ (S,\ P,\ C) + U \qquad (1.)$$

Where E = the probability of entering the Midcity College
S = a vector (or set) of student characteristics,
P = a vector of Midcity College Admissions process components,
C = a vector of the average scores of the characteristics of the student's other college choices,
and U = an error term.

With such a model, it would be possible to obtain an estimated probability of a student entering Midcity College, as well as to define the effect of the various characteristics on the student's college choice decision.

The Empirical Analysis

The model proposed above was tested empirically through Probit Analysis using a sample of 1352 students that were offered admission at Midcity College, a medium sized, private university in New York, of whom 483 or 35.7% eventually entered Midcity. Table 1 shows the variables collected for each student, along with the mean and standard deviation for each variable. The variables classified as student characteristics are: live in New York, live in the county where Midcity is located, female, low SES, High SES, Private school, Parochial school, rank in top 10%, rank in top 20%, rank in top 40%, Student Search Applicant, and Health Career Interest. The variables that are included as admissions process components are: had an interview, had a campus tour, talked with a faculty member, and participated in the Open Campus Program. All of these variables were coded as dichtomous (0 to 1) "dummy" variables. Thus, in Table 1, the mean for these variables indicates the percentage of the sample with those particular characteristics, (i.e., 62.13% of the sample live in New York, while 44.01% had an interview). The only student characteristic or admissions process component that is a continuous variable was the student's SAT verbal and SAT math scores. Thus 587 was the mean SAT verbal score and 651 was the mean SAT math score. The intercorrelations of the dependent variable were generally low, reducing the possibility of multi-collinearity problems.

The variables used to represent the student's alternative college choice are an average of the characteristics for all of the other colleges that the student applied to, besides Midcity. For example, if the student applied to Cornell University and Rensselaer Polytechnic Institute, besides Midcity, the variables were derived in this manner:

1. The characteristics of these two colleges, as obtained from Peterson's Guide and Astin are:

College	Total Enr.	Freshman Enroll.	# of Faculty	Tuition	# of Majors	Combined SAT Scores	% Students Recv'g Aid
Cornell	15,660	2,600	2,670	3,900	58	1,310	65
RPI	4,500	1,089	425	3,600	26	1,300	60

2. These characteristics are then summed and averaged, yielding an average score as follows:

Sum	20,160	3,689	3,095	7,500	84	2,610	125
Average	10,080	1,845	1,548	3,750	42	1,305	62.5

3. This average score for each characteristic is then used in the empirical estimation of the model. This procedure was done separately for all the students in the sample. The 1352 students applied to 223 other schools besides Midcity. The variable "Number of Schools Applied to" was computed by summing the schools applied to, not including Midcity. Thus, if a student did not apply to any colleges besides Midcity, all of these variables are equal to zero. Table 1 also shows the mean and standard deviations for these alternative college choice variables. The variable "Entering Midcity" shows that 35.72% or 482 students entered Midcity College.

Table 1. Descriptive Statistics of Variables Used

VARIABLE	MEAN	STANDARD DEVIATION
Live in New York State	0.6213	0.48
Live in Midcity County	0.0666	0.24
Female	0.3854	0.48
Low SES	0.0643	0.24
High SES	0.6406	0.48
Private School	0.1050	0.30
Parochial School	0.0636	0.24
Rank in top 10%	0.6657	0.47
Rank in top 20%	0.2189	0.41
Rank in top 40%	0.0836	0.27
Health Career Interest	0.4623	0.49
SAT verbal score	587.0902	78.71
SAT math score	651.9948	77.14
Student Search Applicant	0.3772	0.48
Had an Interview	0.4401	0.49
Had a Campus Tour	0.4682	0.49
Talked to Faculty	0.4194	0.49
In Open Campus Program	0.1923	0.39
Total Enrollment	10151.5200	6106.76
Freshman Enrollment	1521.1553	886.08
Number of Faculty	1090.2470	737.76
Tuition	2620.2855	1073.25
Number of Majors	38.3254	13.99
Combined SAT score	1171.4386	285.97
% of students receiving aid	44.1324	15.13
Number of schools applied to	3.0732	1.47
Entering Midcity	0.3572	0.47

The Results of the Empirical Estimation of the Model

Based upon the model of the student college choice decision discussed previously, the parameters of a student choice model for Midcity College were estimated through the use of Probit Analysis using the variables listed in Table 1. The data were generated from a survey questionnaire sent to over 3,000 students that applied for admission at Midcity College. There were responses from 1352 students, representing a response rate of approximately 44%.

Table 2. Results of the "Probit" Analysis

VARIABLE	COEFFICIENT	STANDARD ERROR	t STATISTIC
Live in N.Y.S.	0.248	9.09	2.75**
Live in Midcity Co.	-0.049	0.17	0.28
Female	-0.086	0.09	0.98
Low SES	0.239	0.16	1.43
High SES	-0.043	0.09	0.48
Private School	-0.216	0.14	1.57
Parochial School	-0.265	0.16	1.60
Rank in top 10%	-0.374	0.22	1.69
Rank in top 20%	-0.314	0.22	1.38
Rank in top 40%	0.014	0.24	0.06
Student Search	0.068	0.09	0.78
Health Career	0.088	0.08	1.11
SAT Verbal Score	-0.00143	0.00057	2.49**
SAT math score	-0.00108	0.00061	1.78
Interview	-0.036	0.09	0.40
Campus Tour	0.493	0.09	5.25**
Faculty Talk	0.333	0.09	3.90**
Open Campus Program	0.369	0.10	3.55**
Total Enrollment	0.0000467	0.000019	2.47**
Freshman Enrollment	-0.000264	0.000101	2.59**
Number of Faculty	-0.0000487	0.0001	0.48
Tuition	-0.000033	0.000069	0.47
Number of Majors	0.0075	0.0052	1.43
Combined SAT score	-0.00108	0.000031	3.53**
% Receiving Aid	0.00247	0.0035	0.70
Number of Applications	-0.214	0.031	6.89**

constant	2.464
Number of observations	1352
Log of likelihood function	-707.64
Degrees of freedom	23

F statistic - indicates a level of significance of .01

**The t statistic for this variable indicates a level of significance .01

As shown in Table 2, by the t statistic, there are a number of highly influencial variables. The most important of these are the number of applications, the combined SAT score of the other colleges applied to, and size of the other colleges, most of the Midcity College admission process components, and the student's verbal SAT score. Whether the student lives in

New York State is also very important. There are also a number of variables that could be dropped from the model because they have little or no effect on the student's college choice decision. Some of these that could be dropped are: live in Midcity county, Rank in top 40% of class, and the interview. The interview variable is surprising because previous research has shown that an excellent interview has a high positive correlation, and a poor interview has a high negative correlation with the dependent variable. Both of these effects seem to negate each other.

Also surprising is the t statistic for the tuition and % receiving financial aid variables, but this finding is consistent with other research. These results are, of course, unique to the student population of Midcity College. However, the relative importance of the independent variables in their effect on the student college choice decision as denoted by the t-statistics, has policy implications that may be inferred to other samples. The most striking of these implications is that the intervention techniques of the admissions office used to attract students to Midcity appear to be very effective. These admission process components include a campus tour, a faculty talk, and an Open Campus Program, in which the student is brought to campus for a week of seminars. Because the signs of the coefficients of these variables are all positive, this indicates that the students that receive these treatments are more likely to enroll at the college. Another implication is that the more colleges a student applies to, the less likely that student will enroll at a particular college. This, of course, is well known to admissions officers, but now there is empirical evidence for this fact. Finally, based upon this sample, this study offers evidence that there is a tendency for students to choose a college located in their home state.

Application of Prediction Model

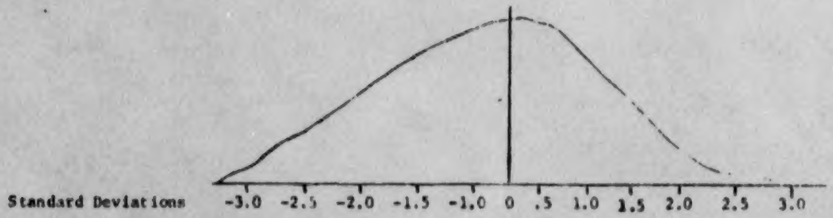
This model was intended to yield a probability of a student entering Midcity College versus one of the other colleges to which the student applied. To obtain this probability, the admissions office staff would assemble the data that describes the student in terms of the model. For each variable in the model, the value for that student should be multiplied by the coefficient for that variable derived by the model. The sum of all these calculations is then used to determine the probability from a Z score distribution table. The following example is an illustration of this process.

Suppose a student applied to Midcity College and the Admissions Office staff of Midcity were able to collect the following information about the student from their admissions form: he lived out-of-state, was male, was in a high income group, graduated from a public high school, was ranked in the top ten percent of his class, was contacted by Midcity College through Student Search, had SAT scores of 620 verbal and 680 math, had an interview, campus tour, and faculty talk, and he applied to two schools in addition to Midcity--Cornell University and RPI. The probability of this student entering Midcity College would be estimated through the following process:

1. List each characteristic of the student, and multiply by the appropriate co-efficient, sum these products, and add the constant term:

live in New York	0				
live in Midcity County	0				
male	0				
high income	1	x	-0.043	=	-0.043
public school	0				
rank in top 10%	1	x	-0.374	=	-0.374
student search	1	x	0.068	=	0.068
SAT verbal	620	x	-0.00143	=	-0.8866
SAT math	680	x	-0.00108	=	-0.7344
interview	1	x	-0.036	=	-0.036
Campus tour	1	x	0.493	=	0.493
Faculty Talk	1	x	0.333	=	0.333
Total enrollment*	10080	x	0.0000467	=	0.471
Freshman enrollment*	1845	x	-0.000264	=	-0.487
Number of faculty*	1548	x	-0.0000487	=	-0.075
Tuition*	3750	x	-0.000033	=	-0.124
Number of majors*	42	x	0.0075	=	0.315
Combined SAT score*	1305	x	-0.00108	=	-1.409
% receiving aid*	62.5	x	0.00247	=	-0.154
number of applications	2	x	-0.214	=	-0.214
			2.464		2.464
			TOTAL	=	- .049

2. Because the sum of the characteristics "scores" times their coefficients yields an estimate of the probability in terms of standard deviations from the mean of the probability distribution, it is necessary to determine the probability by locating the total maximum likelihood estimate score (i.e., for this example: -0.049) in a normal table. A normal table shows the % of the area under the normal distribution curve according to standard deviations. Fig. 1 is an example of this.



S.D.	Area Under the Curve	Probability of Entering
-3.0	.001	0.1%
-2.5	.006	0.6%
-2.0	.03	3.0%
-1.5	.07	7.0%
-1.0	.16	16.0%
-0.5	.31	31.0%
0.0	.50	50.0%
+0.5	.69	69.0%
1.0	.84	84.0%
1.5	.93	93.0%
2.0	.97	97.0%
2.5	.994	99.4%
3.0	.999	99.9%

Fig. 1

Thus, for our example total of -0.049, the probability of that particular student entering Midcity College is slightly less than 50%. This same type of procedure could be done for any student with appropriate information.

Summary and Conclusions

The purpose of this article was to formulate and empirically test a model of student college choice decision. This model could then be used as the basis to estimate the probability of whether a student would enter a particular college. A model was developed based on the decisions a student makes in picking a college. The model has three primary components: a vector of student's personal characteristics, a vector of the admissions process components that the student experienced, and a vector of the average characteristics of the other colleges to which the student applied.

The student college choice decision model was tested empirically, using a sample of 1352 students that were accepted for admission to a large private university in New York State. The results of the model demonstrated that the admissions process components of the university were influential in the student's college choice decision process. Also influential were whether the student lived in New York State, the number of other colleges the student also applied to, and the student's verbal SAT score.

The model was used to estimate the probability of whether a hypothetical student would enter Midcity College, and the process of estimating this probability was discussed. This student college choice prediction model is very general in nature, and could readily be adapted to the needs of any selected college or university. Although the model would have to estimate for each unique case, the procedures involved are sufficiently well known that computer packages should be available at most college computing centers. The data required for the estimation of the model could be obtained through a survey of all applicants to the college, and could be routinely collected for probability estimation purposes through the application forms completed by prospective students. Through the use of prediction model, such as described, an admissions office staff could have greater control over the quality and quantity of an entering class.

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MESSAGES AND MEDIA: TOWARD ENHANCED PERFORMANCE IN COMMUNICATING WITH PARENTS OF PROSPECTIVE STUDENTS

Larry H. Litten
Associate Director
Consortium on Financing Higher Education

Interest in the provision of information about colleges to prospective students has surfaced on both sides of the academic market: colleges are beginning to exploit the promotional principles and techniques of marketing in order to capture consumer attention and present their cases effectively to potential students; students (or consumer advocates who elect to speak on their behalf) are expressing an interest in more and better information to aid in the selection of a college. Considerable research has been directed toward these distinctive, but interrelated concerns. Institutional market research has focused primarily on students' sources of information and influences on students as they select the colleges to which they will apply and the college that they will attend (Chapman, 1980; Gilmour, 1978; Sullivan, 1976; Sullivan and Litten, 1976; University of California, 1980; Yankelovich, Skelly and White, 1978). "Consumerist" interests have focused primarily on the information about colleges that students, or their parents, desire. (Lenning and Cooper, 1978; Stark, 1978).

The research reported here was institutional market research, designed to aid a selective, national college communicate more effectively with students and their parents. It was conducted, however, with the belief that serving the information needs and desires of consumers would be in the best interests of the institution. We defined media broadly to include both publications and people, and hypothesized that particular media would be differentially effective in carrying specific information to a given audience. Media vary in versitility, credibility and authority, convenience and accessibility, cost, timeliness and efficiency. We examined our hypothesis by asking students and their parents what they most wanted to know about the colleges that they would consider and through what medium they would most like to obtain this information. The answers could help address the following questions: 1) what kinds of information about colleges are desired by prospective students and their parents? 2) if an institution desired to communicate certain information to a given audience, what medium would be most appropriate?

Parents are the audience examined in this paper. Research has identified parents as a major influence on the college decisions of high school seniors (Chapman, 1980; Davis, 1977-78; Sullivan, 1976; U. of California, 1980). Nevertheless, except for Lenning and Cooper's work, their information needs have received little direct research attention.

The Research and the Data

The research was conducted at Carleton College, in collaboration with The College Board. Details on the sample have been presented in other papers (Litten et al., 1980) and will not be repeated here due to space constraints. Briefly, the respondents are the parents of 1978-79 high school seniors who had combined PSAT scores of 100 or greater; they were residents of six metropolitan areas located throughout the United States. A response of 47% was obtained from a self-administered questionnaire mailed to 2,000 parents.

The questionnaire asked the respondent to rate 24 aspects of colleges according to their importance to the parent when a child chooses a college. They were then requested in an open-ended question to list the three most important aspects[1] and to identify their first and second choices of sources (media) for information about each of the aspects listed. Ten information sources were listed on the questionnaire, along with space in which the respondent could name additional sources.

The Results

Seven types of information were listed among the 3 most important things to know about a college by at least 10% of the parents.[2] They are given in Table 1 (some are collapsed categories -- for example, three types of financial information were listed in the preceding question; they have all been included in our "financial" category). Financial information (price, financial aid, net cost, etc.) heads the list, with 54% of the parents who answered the question indicating that it is among the most important types of information. It is followed by information on fields of study offered (30%).

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[1] Although many of these responses were taken from the preceding list of 24 attributes, a total of 53 codes were developed to handle the full array of responses.

[2] Information listed by at least 10% of the sample is included in this report only if the same threshold was exceeded for the reporting of preferred media. "Location" was listed by 10% of the parents, but had a lower response regarding media.

Table 1
First Choice Medium for Specific Types of Information Desired*
(percentages)

First Preference Medium

Type of Information	High School Counselor	College Admissions Officer	College Faculty	College Alumni	Current Students	Parent of Current Student	College Publi-cations	Commercial Guidebooks	Other Medium	Total	N
Financial	7	48	2	1	4	5	29	4	-	100%	481
Fields of Study Offered	17	23	11	4	3	-	37	3	2	100%	270
Teaching Reputation or Ability of Faculty	16	6	13	27	17	-	3	10	8	100%	211
Academic Standards/General Quality	17	10	21	15	6	1	9	11	10	100%	158
Careers to which College Might Lead	15	20	13	26	4	-	12	4	6	100%	105
General Academic Reputation	23	6	3	16	7	3	10	16	16	100%	99
Social Atmosphere	3	4	3	14	60	5	5	2	4	100%	97

*Only one first-choice medium could be listed for each type of information by a given respondent.
Note: Highest percentage in each row is underlined.

The first-choice medium through which desired information is preferred differs markedly according to the type of information that is sought. Table 1 lists the principal types of information and media that parents listed.[1] With one exception, each type of information is most likely to be preferred through a different medium; with two exceptions, each medium emerges as the most frequently named first choice source for one of the types of information. A clear first choice source for financial information is the college admissions officer,

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[1] Two of the 10 media listed on the questionnaire were very infrequently identified as a first or second choice information source: a high school teacher (non-counselor) or a rabbi/priest/minister.

followed distantly by college publications. Interest in the fields of study offered by the college is most likely to be satisfied by college publications, with an admissions officer the first choice of a smaller segment of parents. College faculty are most likely to be considered the best source of information on academic standards and the quality of the school's offerings, followed closely by high school counselors. Reputational information is likely to be preferred from non-collegiate sources. Alumni are the most frequent first choice source for information about the teaching reputation or ability of the faculty; high school counselors are the most frequently identified top choice for information on a college's general academic reputation. Career information is most often preferred from alumni, or from admissions officers. Current students are overwhelmingly the favored source of information about an institution's social atmosphere.

The survey asked about both first and second choice media for the information that parents most desire. For the most part, the media that were "runners-up" in the frequency with which they were named first choice media, are the most often named second choice sources of information. Noteworthy is the emergence of "parents of current students" as an important second-choice source of information in a number of areas. Parents are not listed as a first-choice source for any kind of information by other than a handful of respondents. They are cited, however, as a second-choice medium of information about social atmosphere by almost a third of the parents and for financial information by a fifth of the respondents.

In Table 2 first and second choice media are combined. College admissions officers are preferred by substantial numbers as the first or second choices for information about financial aspects of the college and careers to which the college might lead, and a close runner-up to college publications as a source of information about fields of study offered. Combining the first and second choices increases the relative size of the parents group that would turn to high school counselors for information about a college's general academic reputation as opposed to other sources for such information. Students remain

Table 2
Preferred Media (1st or 2nd Choice) for Specific Types of Information Desired*
(percentages)

First or Second Choice Media

Type of Information	High School Counselor	College Admissions Officer	College Faculty	College Alumni	Current Students	Parents of Current Students	College Publi-cations	Commercial Guidebooks	N
Financial	17	66	4	4	13	24	50	15	481
Fields of Study Offered	30	48	22	11	14	2	54	15	270
Teaching Reputation or Ability of Faculty	24	15	19	44	43	11	10	20	211
Academic Standards/General Quality	27	23	34	27	20	11	15	18	158
Careers to which College Might Lead	32	47	30	38	9	1	21	10	105
General Academic Reputation	37	17	13	28	16	12	16	29	99
Social Atmosphere	5	11	9	38	84	37	14	4	97

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*N for first-choice responses used in calculating percentages; rows do not add to 100% because respondent could list 2 media.
Note: Highest percentage in each row is underlined; dotted lines indicate close runners-up.

the overwhelmingly preferred source of information about social atmosphere, followed distantly by alumni and parents of current students. No clear pattern of preference for information about academic standards/general quality emerges, although faculty continue to be favored by the largest number of parents. Either alumni or current students could carry information about the teaching reputation or ability of the faculty to substantial numbers of parents, although alumni have a slight edge as first-choice medium.

Correlates of Media Preferences

Both for applied marketing purposes and for the understanding necessary for a theory of marketing communications, we sought evidence of attributes that might be associated with different media preferences. We examined the first choice media for one factual type of information (financial) and one reputational type of information (teaching ability) in relation to a number of variables: city of residence, the type of school that the parent listed as first choice for the child (public/private; selective/non-selective), parent's sex, parent's educational level, and size of the parent's alma mater. These analytic elaborations contributed some small insights into the different patterns of media preference.

Financial: The variables that we introduced provided little explanatory power regarding media preferences for financial information. The only statistically significant difference emerged for parents who listed a private college as first choice who were slightly more likely to prefer college admissions officers as a source of information than parents who listed public institutions (53 vs. 44%).[1]

Teaching reputation or ability of faculty: Education had a small effect on preferred sources of information regarding teaching. The higher the level of the parents' education, the less likely that college admissions officers were the preferred source (12% for parents without degrees; 8% for those with bachelor's degrees; 2% among the graduate-educated).[2] The size of the undergraduate institution that the responding parent attended (for those with at least a bachelor's degree) had a systematic effect on media preferences for information on faculty teaching reputation. The smaller the parent's alma mater, the more likely they were to choose faculty as the first-choice source of such information (22% if parent's college had 4,000 or fewer students; 11% for colleges 4,001 - 10,000; 6% for parents from colleges with more than 10,000. There were also some interesting differences among the cities, but they are substantially more difficult to interpret. Some extreme examples of first-choice preferences for specific media are noted below:

Faculty	Twin Cities - 0	Texas - 28%
Alumni	Twin Cities - 39%	D.C. area - 14%

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[1] A two-tailed significance level of .05 was employed in all comparisons.

[2] This relationship was also observed for financial information but was not statistically significant.

Discussion

One of the principal benefits of a marketing approach to institutional management is its attention to specialization (within limits). Efforts are made to match institutions and students, media to messages, and other organizational attributes to the particular needs of a specific clientele. One set of challenges for the academic marketer is to deliver information efficiently and to exploit media for their particular effectiveness, while avoiding overloading them. These data provide some preliminary clues regarding how that might be done when communicating with parents, an important influence on students' selection processes.

Specific medium/message linkages were discovered. Factual, impersonal information (e.g., fields of study offered) are generally preferred through impersonal information media (e.g., college publications). Factual information that may differ according to a student's personal situation (e.g., financial information, career information) is most likely to be desired via college admissions officers. General qualitative information (e.g., general academic reputation) appears to be preferred from a source that is not associated with the institution (e.g., high school counselors). Current students and alumni are most likely to be considered the best sources of specific qualitative data (e.g., teaching reputation of faculty, social atmosphere). Parents of current students could play a secondary role in conveying certain types of information to parents of prospective students; they are viewed by a substantial number of parents as second-best carriers of two widely disparate types of information -- financial and social atmosphere.

The findings may be even clearer regarding inappropriate media. Official college promotional resources (admissions officers and publications) are not very desirable media through which to convey information about institutional quality or reputation; while students may be able to provide some particulars in this area (e.g., information about teaching), they are not preferred sources for more general qualitative information, except regarding social atmosphere.

Education appears to increase slightly a parent's willingness to deal directly with first-hand evidence regarding qualitative aspects of academic life. Higher levels of education appear to reduce the communication effectiveness of admissions officers. More personalized parental educational experiences appear to increase willingness to deal with faculty directly. There are also important differences in medium/message linkages among the various cities due perhaps to differences in culture or the nature of educational systems.

Several critical issues have not been addressed in this particular piece of research. They will need appropriate attention before a theory of academic marketing communications can be a reality and effective guidelines for the communications manager can be developed. It will certainly be important to expand the type of research reported here to other consumer groups; we will be reporting in the future on the results from our companion study of students. Both our students and the corresponding parents sample are from a small segment of the college-bound population (the "high-ability" market) and a broader spectrum of academic "consumers" should be examined.

Specific linkages between preferred media and particular messages exist and some very modest correlates of media preference were observed. The functional reasons for these relationships were not studied, however. Are particular media preferred by the consumer for specific information because they are more accessable, cost less in time or money, can be made to carry more specific information (or prodded for contingent information--i.e., if the answer to my first question is "A", then my second question will be "B"), or because they are less threatening, etc.? From the institutional perspective, the economics of using specific media to carry specific messages have not been addressed--how much do they cost in money, in lead time, in control? can they be controlled? etc. And finally, how much specificity in media/message matching is economically defensible? Do the costs of using various media differ, particularly in view of their relative efficiencies? It costs time and money to prepare and monitor different messages for different media, even where there is no net difference in the costs of carrying the information via different media.

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THE RELATIONSHIP BETWEEN THE COLLEGE-GOING DECISION AND STUDENTS' CHARACTERISTICS AND PERCEIVED IMPORTANCE OF COLLEGE EDUCATION*

Christos Theophilides
Assistant for Institutional Research
State University of New York at Albany

From 1870 to 1950, the enrollment in American colleges and universities doubled every 15 years; from 1955 until recently it doubled every 10 years (Ben-David, 1972). While the fall 1968 enrollment was estimated to be 43 per cent of the 18-23 age group, today's enrollment approaches almost 50 per cent of that age cohort. Given the growth of American higher education, a number of research studies have been undertaken whose purpose has been to identify the reasons thought by students to have influenced their decision to attend college and to study the relation between the reasons cited and students' personal and family background characteristics.

The literature accumulated through research suggests that the decision to go to college is the outcome of a complex interaction of factors. Such factors remain a student's aspirations, abilities, and personality, the values, goals and socioeconomic status of the parents, and the direction of the influence of a student's friends, teachers and other reference persons. Stordahl (1970), for example, found evidence that women and students who had graduated in the upper half of their high school class tended to say that they had been somewhat more influenced by intellectual concerns than men and those who graduated in the lower half of their class. Scott and Fenske (1973) concluded that development of intellectual ability, securing vocational and professional training, and earning a higher income were among the most important goals in attending college. Corazzini, Dugan, and Grabowski (1972) found that family resources are an important determinant of the decision to go to college.

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Taken as a whole, the research studies in this area appear to have three major flaws. First, most of the studies in this area have looked at the relationship between the decision to go to college and a number of student demographic variables and family background characteristics. Variables reflecting student value orientation, high school experience in terms of preparation for college work and perceived importance of college education have been virtually lacking from such studies.

Second, most of the studies in this area have employed factorial designs in an effort to highlight the relation between certain covariates and/or independent variables and items that pertain to the college going decision and/or factors obtained through factor analysis studies. But as Kerlinger (1964) points out, "variation in a given dependent variable is usually a function of concomitant variation in many independent variables acting simultaneously" (p. 631). Factorial designs are not in a position to highlight the relative importance of a number of independent variables for the phenomenon under investigation.

Third, despite the widespread attention given to the relation between student and/or family background characteristics and the decision to go to college, interaction effects have been surprisingly neglected from such studies. Yet, it seems reasonable to ask whether students with different background characteristics decide to go to college for different reasons.

The present study was designed to overcome the above flaws in three ways. First, in addition to variables dealing with personal and family background characteristics, the study included variables reflecting high school preparation in various academic subjects and study skills as well as variables dealing with students' value orientation and perceived importance of college education. Second, the study employed a multivariate research design to test the relative importance of variables potentially influencing the college-going decision. Through a hierarchical setwise multiple regression analysis, the study sought to determine the joint effect of sets of variables as well as the unique contribution of the predictor variables in explaining the variance of two criterion measures relative to the college-going decision. Third, the study also looked at interaction effects to determine whether the relation under investigation (if any) was different for different students.

METHODOLOGY

Population and Sample

The study was conducted in a large, public, residential university in New York State. The population of the study was all first-time freshman students enrolled during the Fall 1978 semester (N=1465). All first-time students who attended the 1976 Summer Orientation Program and who also participated in a follow-up study were included in the sample (N=509).

Instruments and Variables

Sample members were asked to respond to two questionnaires. The first questionnaire was prepared by Astin for the CIRP project,and it was administered to freshman students during the summer orientation period; the second questionnaire was administered for a follow-up study at the end of the freshman year.

One portion of the first questionnaire asked students to indicate how important each of twelve reasons for attending college was to them. Reasons included in this set of items were job preparation and increase of income, intellectual curiosity and development of adult roles, relationships and styles. A three-point scale (1="not important," 2="somewhat important," 3="very important") was employed to rate the importance of each item. Six items from this set were subsequently used to construct two scales (Intellectual Curiosity (IC), Professional and Economic Success (PES)), which became the dependent measures in this inquiry.

A second portion of the above questionnaire included eighteen items referring to social issues and personal aspirations. Issues covered by this set of items were achievement and recognition, creative and expressive work, professional advancement, economic success and influence of social and political structure. Students were asked to indicate how important each of the eighteen items was to them using a four-point scale where 4="essential" and 1="not important." Seventeen items were subsequently used to construct four scales, which became four of the independent variables referred to below as attitudinal scales.

The first questionnaire also elicited information with respect to student characteristics including sex, parents' education and income, highest degree planned, home distance from college, parents' dependents in college, race, and extent of preparation while in high school in various academic subjects and in study habits. Information on high school percentile rank and on SAT scores (verbal and math combined) was obtained from the Student Permanent Record system maintained by the institution's admissions office.

In April 1979, a follow-up survey yielded information on the perceived importance of four major goals of college education (gain a broad, liberal arts education, gain career knowledge and skills, learn about myself, my values, and my life's goals and enhance my interpersonal skill) at the time respondents entered college; subjects were asked to rate the importance of each goal on a four-point scale where 1="not at all important," and 4="extremely important."

Statistical Procedures

Analysis began with a principal components analysis first of the twelve items on reasons for attending college and second of the eighteen items on social issues and personal aspirations. Components with eigenvalues of 1.0 or greater were rotated to the varimax criterion. Mean factor scale scores were then computed for each respondent by summing the raw scores on items with rotated factor loadings of .40 and above on the particular factor and then dividing by the number of items (Armor, 1973).

Hierarchical, setwise multiple regression analysis was the primary analytical procedure in this study. Two such multiple regressions were performed, one for each factor used as the dependent variable. With Factor I (Intellectual Curiosity) as the dependent measure, Factor II (Professional and Economic Success) was entered first (to control for the correlation between the two scales and to also get a conservative estimate of the contribution of the predictor variables in explaining the criterion measures), followed by the set of variables dealing with student and family background characteristics, the set of variables reflecting high school experience, and then the set of attitudinal scales and perceived importance of college education. Once the above sets of variables had been entered in the regression equation, and to test whether students with different backgrounds were differentially influenced by the two criterion measures, a set of 40 interaction terms was entered. The interaction vectors were created by cross-multiplying a student's sex, SAT combined score, high school percentile rank, parents' education, and highest degree planned with each of the four attitudinal scales and the four goals of college education. In the second regression, with Factor II as the dependent variable, Factor I was entered first, followed by the other sets in the same order given above.

The statistics of primary interpretive interest were R^2 change and beta weights. The beta weights were examined only if the R^2 change for a given set of variables as a whole made a significant contribution to the explanation of variance in a criterion measure.

RESULTS

The first principal components analysis and varimax rotation of students' ratings of the twelve reasons for deciding to go to college yielded four factors with eigenvalues $>$ 1.0, explaining 54.0 percent of the total variance. The four factors were labeled Intellectual Curiosity, Professional and Economic Success, Practicality and Social Considerations; the percentage of variance explained by each factor was 20.2, 13.1, 10.9 and 9.8 respectively and the respective internal consistency (alpha) reliabilities were .69, .68, .23 and .35. Because of their low reliability, the last two factors were dropped from further analysis.

The second principal components analysis and varimax rotation of students' ratings of the eighteen statements on social issues and personal aspirations yielded five factors with eigenvalues $>$ 1.0. A scree test, however, indicated that four factors should be used, explaining together

49.3 percent of the total variance. The four factors were labeled Social and Political Influence Orientation, Economic Success Motivation, Creative and Expressive Work Orientation, and Academic Achievement and Recognition Desire; the percentage of variance explained by each factor was 19.2, 12.3, 10.0 and 7.8 respectively and the respective internal consistency (alpha) reliabilities were .81, .58, .63 and .52. (the complete factor structures are available from the author upon request).

Table 1 describes the results of the multiple regression analyses and indicates that with the Intellectual Curiosity scale as the dependent measure, the full-model multiple regression produced an R^2 of .329 (multiple R=.573), with an associated F ratio of 2.52 (df=66/339, $p < .01$). Further examination of Table 1 reveals that the set of personal characteristics variables, that of the high school experience variables, and the set of variables including the attitudinal scales and the college education goals produced statistically significant increments in the R^2 on the IC scale after controlling for the variables already present in the regression model.

With the Professional and Economic Success scale as the dependent measure, the overall multiple regression model produced an R^2 of .279 (multiple R=.528), with an associated F ratio of 1.99 (df=66/339, $p < .01$). Table 1 indicates that the set of personal characteristics variables, as well as that of the attitudinal scales and the college education goals, produced statistically significant increments in the variance explained on this dependent measure after controlling for the variables already present in the regression model.

TABLE 1

Multiple Regression Summary

	CRITERION MEASURES		
Variance Source	Intellectual Emphasis	Professional & Economic Success	Degrees of Freedom
R^2 due to the presence of the other scale	.034***	.034***	1/404
R^2 increase due to personal characteristics[a]	.069**	.043*	9/395
R^2 increase due to high school experience[b]	.037*	.031	8/387
R^2 increase due to attitudinal scales and perceived goal importance[c]	.091**	.069**	8/379
R^2 increase due to interaction of personal characteristics and attitudinal scales & perceived goal importance[d]	.098	.102*	40/339
Total R^2 for all variables and interactions	.329**	.279**	66/339

[a] Controlling for either the IC or the PES scale

[b] Controlling for the other scale and the personal characteristics variables

[c] Controlling for the other scale, the personal characteristics variables and the high school experience variables

[d] Controlling for the other scale, the personal characteristics variables, the high school experience variables and the attitudinal scales and perceived goal importance variables

*$p < .05$

**$p < .01$

***$p < .001$

TABLE 2

Beta Weights for All Predictor Variables

Predictor Variables	CRITERION MEASURES	
	Intellectual Curiosity	Professional & Economic Success
OTHER SCALE[a]	.204**	.210**
PERSONAL CHARACTERISTICS[a]		
Sex	.164**	-.074
Race	.072	-.009
SAT Score	-.136**	.107*
High School Percentile Rank	-.009	.056
Highest Degree Planned	.124*	-.102*
Home Distance from College	.046	-.050
Parents' Dependents Attending College	-.072	-.093
Parents' Estimated Income	-.025	-.001
Parents Education	.001	-.025
HIGH SCHOOL EXPERIENCE[b]		
Preparation in:		
Math	.011	.023
Reading-Composition	.021	.022
Foreign Languages	.078	-.109
Science	-.003	.118
History-Social Studies	.005	-.009
Vocational Skills	-.033	.096
Music & Artistic Skill	.128*	-.113
Study Habits	.085	.004
ATTITUDINAL SCALES & GOALS[c]		
SCALES		
Social & Political Influence Orientation	.158*	-.121
Academic Achievement & Recognition Desire	.027	-.015
Creative & Expressive Work Orientation	.117	-.012
Economic Success Motivation	-.117	.217**
GOALS		
Gain a Liberal Arts Education	.062	-.095
Gain Career Knowledge & Skills	-.035	.128*
Learn about Myself, my Values & My Life's Goals	.079	-.034
Enhance my Interpersonal Skill	.097	-.044

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[a] Controlling for either the IC or the PES scale and the personal characteristics variables

[b] Controlling for either the IC or the PES scale, the personal characteristics variables and the high school experience variables

[c] Controlling for either the IC or the PES scale, the personal characteristics variables, the high school experience variables, the attitudinal scales, and the variables of goal importance and importance of graduating from college

*$p < .05$

**$p < .01$

Table 2 arrays the beta weights for all independent variables on each of the two criterion measures. Examination of the beta weights indicates that sex made the highest contribution in explaining the variance of the Intellectual Curiosity factor followed in order by Social and Political Influence Orientation, SAT score, high school preparation in music-artistic skills and highest degree planned. Given the way sex was recoded (1=male, 2=female), Table 2 suggests that female students were more likely than male ones to have been influenced by academic considerations when they decided to attend college. Furthermore, the higher one's academic aspirations (in terms of highest degree planned) and extent of high school preparation in music-artistic skills the more likely it is that one was influenced by intellectual considerations to attend college. Table 2 further suggests that students scoring high on the social and political structure influence scale were also significantly influenced by academic considerations in their decision to attend college. The relationship, finally, between intellectual curiosity and SAT score appeared to be negative; apparently, the higher one's SAT score the less one was influenced by academic considerations to go to college.

Four predictor variables made unique and statistically significant contributions in explaining the variance of the Professional and Economic Success factor. Economic success motivation made the highest contribution, followed in order by the goal to gain career knowledge and skills, SAT score, and highest degree planned. Table 2 suggests that the higher one's motivation for economic success, the desire to gain career knowledge and skills, and SAT score, the more likely it is that one was influenced by economic and career considerations in deciding to attend college. Furthermore, Table 2 reveals that a negative relationship appeared to exist between highest degree planned and the importance attributed to professional and economic success; apparently the higher one's academic aspirations.the less one was influenced by economic motives in deciding to go to college.

LIMITATIONS

The study is limited in at least two respects. First, the results are based on data collected from students planning to attend a particular institution. To the extent that the students who enroll at this particular institution differ from those of other institutions, results may not be generalizable beyond the population from which the respondents in this study were drawn.

Second, certain of the relations identified by the present study should be considered with some caution,given the moderate internal consistency reliability coefficients for three of the attitudinal scales. Reliability coefficients around .50 and .60 yield, in fact, a relatively low coefficient of determination. As Kerlinger (1964) points out, "unless one can depend upon the results of the measurement of one's variables, one cannot, with any confidence, determine the relations between the variables" (p. 455). Although the reliability coefficients obtained for three attitudinal scales (Creative and Expressive Work Orientation, Academic Achievement and Recognition Desire, Economic Success Motivation) are not considerably low, they are still not high to the extent that measurement accuracy is beyond any question.

DISCUSSION

The purpose of this study was to investigate the relationship between the decision to go to college and variables dealing with students' personal and family background characteristics, high school preparation in the various academic subjects and in study habits, and students' value orientation and perceived importance of college education. The study also sought to discover whether such a relation might be different for different kinds of students.

Both criterion measures employed by the present study appeared to be reliably related to certain covariates and/or independent variables. The beta weights revealed that sex, SAT score, highest degree planned, high school preparation in music-artistic skill, and social and political influence orientation made unique and statistically significant contributions in explaining the variance on the Intellectual Curiosity scale. With the Professional and Economic Success scale as the criterion measure, SAT score, highest degree planned, economic success motivation and interest in gaining career knowledge and skills made unique and statistically significant contributions in the variance explained on this scale. Certain observations can be made with respect to the above findings.

First, while the results obtained by the present study are consistent with some of the findings reported by earlier studies, they are also different in certain respects. This study replicated earlier findings according to which women tend to say that they are more influenced by intellectual considerations in their decision to go to college than men are (see Feldman and Newcomb, 1969; Stordahl, 1970). In contrast with earlier studies, however, this study concluded that the relationship between intellectual curiosity and aptitude is negative rather than positive. No explanation is easily discernible for the above finding. The speculation can be made, however, that high aptitude students have established their "academic identity" over the high school years and the intellectual motive, therefore, does not exert a strong influence on them.

Second, it is of no surprise that academic aspirations were found to be positively and reliably related to the Intellectual Curiosity factor. Apparently, the higher one's academic aspirations in terms of degree planned, the more one is influenced by academic considerations in his/her decision to go to college. It is a common belief, for example, that higher education is structured to reflect increased scholarly activity. It is also worthy to note that highest degree planned was found to be reliably but negatively related to the Professional and Economic Success factor. Conceivably, the relations observed between academic aspirations and the two criterion measures employed by the present study reflect different student value orientations. Presence of an "economic man" orientation, for example, may orient students to value the practical and to judge things by their tangible utility; hence the negative relationship between academic aspirations and Professional and Economic Success. Presence of a "theoretical man" orientation, on the other hand, may orient students to be especially interested in the discovery of truth and systematization of knowledge; hence the positive relation between academic aspirations and the Intellectual Curiosity factor (see Feldman and Newcomb (1969) for definitions of the two orientations cited above).

Third, going to college comprises one way of developing new interests or of deepening knowledge in areas in which an interest has already been developed. The relation observed between the Intellectual Curiosity factor and high school preparation in music-artistic skills points to this direction. As Mayhew (1979) maintains, "before students actually enroll as freshmen, they typically rank interest in academic things as one of the major determiners of their decision to go to college" (p. 156). It may well be the case that intellectual growth is an end in itself as well as instrumental to other ends. The pursuance of scholarly activity, and its resultant recognition and respect, may be a primary reason for the importance attributed to the Intellectual Curiosity factor. At the same time, intellectual growth may comprise a means for achieving other personal objectives. The relation observed between the Intellectual Curiosity factor and the orientation to influence the social and political structure is quite revealing in this respect.

Finally, the significance of the findings of the present study can be judged from two points of view. Firstly, knowing what the parameters of the college-going decision are serves at least three purposes: it helps college planning in terms of curricular offerings; it highlights the adjustment process of freshman students to college life, a fact which, properly taken into account, might reduce attrition;and,it provides background information for college outcomes studies. Secondly, the findings of the present study are useful for admissions offices. The findings suggest that recruitment brochures should properly present institutional strengths relative to the two major criterion measures employed by the present study. The conclusions reached in this study suggest that course offerings, faculty strengths and interests, and characteristics of the student body appear to be significant pieces of information for prospective students. By the same token, information on employment and/or professional success of graduates appears to be equally important.

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STUDENT YIELD METHODOLOGY: A LIMITED RESOURCES APPROACH TO COLLEGE MARKETING

John P. Mandryk and Michael F. Middaugh
State University College at New Paltz

Introduction

The purpose of this paper is to describe the research design utilized in the analysis of the market position held by the State University College at New Paltz, New York for the Fall 1979 semester. The analysis isolates favorable vs. unfavorable perceived characteristics on the basis of their association with yield. Student yield is defined as the percentage of applicants for admission to the College who were accepted and who ultimately decide to attend New Paltz. As an institution that has begun to reverse a recent history of enrollment decline, the College is especially interested in understanding the dynamics of student yield; i.e., why those who chose to attend New Paltz did so, and equally important, what factors contributed to the college selection decision for those who chose not to attend New Paltz.

As components of the research design, the paper will define the population under study, the process through which the population was sampled for data collection purposes, the techniques used in data collection, the statistical tools used in assembling the data for analytical examination, and the analytical process itself.

Population for the Study

The population for this study was composed of all persons who applied to, and were accepted by, the College at New Paltz for Fall 1979 semester, a total of 4127 applicants.

Sample for the Study

Data collection for this study was planned to take place in two modes: a telephone survey and a mailed questionnaire. This decision was made in order to determine the most efficient means of data collection for future yield analysis. Therefore, it was determined that two separate samples be drawn from the study population for use in the respective data collection techniques. The samples were randomly and optionally stratified to reflect the geographic distribution of the New Paltz student body.

Data Collection

The items in the "Telephone Survey" and mailed "College Selection Survey" are identical. Only the mode of data collection differed.

The content areas for the research instruments were defined by a College-wide Advisory Committee on Yield Research, which was composed of administrators, faculty, and students. Having defined the content areas, questionnaire items were developed by the Office of Institutional Research. The content validity of the research instruments was ascertained through a program of pretesting wherein the questionnaires were administered to college-bound high school seniors and their suggestions and criticisms were solicited. Time constraints precluded further pilot testing for estimates of statistical reliability.

The total sample for this study consisted of 1261 applicants for admission who were accepted by the College at New Paltz. Two hundred twenty (220) applicants, or 17.4% of the sample, responded to the data collection efforts. Of the 220 respondents, 106 answered the telephone survey, while 114 returned completed mail questionnaires. Follow-up measures were employed to obtain the return rate just cited.

Data Assembly

With low return rates via the mail and limited financial resources prohibiting continued telephone surveys, the total number of respondents remained at 220. That the telephone and mail respondent pools were far smaller than anticipated raised two methodological issues: a) could the mailed questionnaires and the telephone interviews he combined into a single respondent pool?; and b) was the combined pool of respondents representative of the study sample?

The decision was made to determine the statistical feasibility of combining telephone and mail responses into a single pool, as items on the respective research instrument were identical. However, because different data collection techniques were employed in gathering responses, it was necessary, prior to any combination of responses, to ascertain that statistically significant differences did not exist between the response patterns for the telephone against the mail surveys. Comparative patterns for telephone versus mail responses were analyzed for each item on the research instruments. The analysis was extended to determine that no significant differences in response patterns could be found among the geographic regions in which respondents live, or by whether or not the respondent had chosen to attend New Paltz. Chi square tests for significant differences at the .05 level of confidence were applied to the response patterns for each item on the research instruments. Significant differences materialized for only three items; the instruments, as total packages, displayed no major pattern of statistically significant differences between telephone and mail responses. Therefore, it was decided to combine telephone and mail responses for analytical purposes.

Representativeness of the Sample

Before beginning analysis of the data collected from the combined telephone survey/mail questionnaire respondent pool, it was necessary to determine whether that portion of the study sample that responded to the data collection effort was representative of the population for the study. Five basic demographic characteristics common to all applicants for admission, and for which data were readily available, were examined to determine if statistically significant differences existed between the respondent pool and the general study population. The demographic characteristics examined were county of residence, high school average, Scholastic Aptitude Test (SAT) score, sex, and preadmission deposit payment status. Chi square tests for significant differences were applied to the respondent pool and the study population within the context of each of the demographic characteristics. Statistical significance was sought at the 0.05 level. Table 1 displays the results of the statistical tests:

Table 1

Chi Square Tests for Statistically Significant Differences, at 0.05 Level of Confidence, between Respondent Pool and Study Population within Selected Demographic Characteristics

		χ^2			Significantly Different?
	d.f.	Critical Value	Calculated Value	Significance	
County of Residence	6	12.59	17.80	0.0067	Yes
High School Average	3	7.81	4.54	0.2079	No
SAT Scores	5	11.07	0.47	0.9932	No
Sex	1	3.84	0.13	0.7156	No
Preadmission Deposit Payment Status	1	3.84	1.87	0.1711	No

Table 1 indicates the absence of statistically significant differences between the respondent pool and the study population for each demographic characteristic except county of residence, where a strong statistically significant difference is evident. Consequently, in order to make the collected responses from applicants mimic the geographic distribution of the study population, respondents within each geographic region were weighted to approximate the region's actual proportion of the study population. The weightings were extended to include preadmission deposit payment status. While the differences between the respondent pool and the study population were not statistically significant for preadmission deposit payment status, the payment of that deposit is a signal of the applicant's decision to attend New Paltz. Therefore, the researchers decided to weight the respondents to mimic the study population with respect to the proportional distribution of applicants by geographic region of residence, and within each region the proportional distribution of applicants signalling their intention to attend or not attend New Paltz via preadmission deposit payment status. Weighting was achieved through the weighting option in the Statistical Package for the Social Sciences. Further, weighting proves to be an effective device in presenting management with the magnitude of the problem.

Data Analysis

Items on the mail questionnaire and interview schedule are identical, and for purposes of data analysis, were grouped into four categories: a) those dealing with sources of information about New Paltz, b) those dealing with physical attributes of New Paltz, c) those dealing with types of formal contact with New Paltz prior to the college selection decision, and d) those dealing with components of New Paltz's reputation.

Responses to each of the items within each of the categories were coded "used the information source"/"did not use the information source"; if the source was used, additional responses were coded as "gave favorable information"/"gave unfavorable information". For physical attributes, responses were coded "aware of the attribute"/"not aware of the attribute".

For types of formal contact with the College, responses were coded "had contact"/"had no contact". For reputational components, responses were coded "had information"/"had no information".

The dichotomous responses were then analyzed to determine whether major differences existed between those applicants who pay the preadmission deposit (i.e., those who decide to attend New Paltz) and those who do not pay the deposit, with respect to use of information sources, type of information received, awareness of the College's attributes, types of formal contact with the College, and awareness of components of the College's reputation.

The data analysis described above was achieved through the crosstabs option in the Statistical Package for the Social Sciences. Chi square statistics were requested within the crosstabs option, thereby presenting a measure of association between preadmission deposit payment status and the dichotomous responses within each of the four categories described above. However, because the data were weighted, statements about association were confined to a descriptive nature. No inferential statements were made nor was reference to statistical significance used. Measures of association ran the descriptive spectrum from "no apparent association" to "apparently strong association". The rule of thumb used in making determination with respect to strength of association was to measure the chi square statistic from the crosstabulation against the table of critical values for chi square at the 0.05 level of confidence. While no mention was made of statistical significance, those crosstabulations with chi square values at or below 3.84 were said to show "no apparent association". On the other hand, relative strength of association was judged by relative distance of the computed chi square above the critical value of 3.84.

No single source of information, physical attribute, type of formal contact, or reputational component is likely to be the sole determinant of an applicant's decision to attend or not attend the College at New Paltz. The relative impact upon student yield of each of the subvariables within each of the categories was measured through multiple regression analysis. The use of multiple regression techniques in the analysis of relative association strength among several dichotomous variables has been used in other social research analyses. (Goldman, 1975) However, in this particular research, the same restrictions govern multiple regression analyses that were in force for the bivariate analyses, i.e., the use of weighted data restricted comments to a descriptive nature with no allusion to statistical significance. The dichotomous variables within each category were entered into the regression equation and the beta weights were examined. Beta weights exceeding 0.10 were defined as associated with the decision to attend New Paltz, with the relative impact of each subvariable defined as a function of the magnitude of the beta weight. Similarly, beta weights within the range -0.10 to $-\infty$ were defined as associated with the decision not to attend New Paltz, with the magnitude of the beta weight acting as an indicator of the relative impact of the subvariables. Beta weights within the range 0.10 to -0.10 were defined as having no impact upon student yield. Thus, multiple regression analysis enabled identification of which sources of information had the greatest impact upon the decision to attend New Paltz and which information sources were most strongly associated with the decision not to attend New Paltz. Similar analyses were repeated with physical attributes of the College, types of formal contact with the College, and components of the College's reputation.

Both the bivariate and multiple regression analyses were performed using total responses. Subsequently, using data selection options within the Statistical Package for the Social Sciences, responses were analyzed by geographic region of applicant's residence. Thus an analysis was produced for the total study population, and for each of the geographic regions within the population.

Summary

Bivariate analyses on dichotomous subvariables within each of four categories of variables were performed to measure the strength of association between each of the subvariables and student yield. The analyses were extended through multiple regression techniques to measure the relative impact of each of the subvariables upon student yield within the context of the other subvariables within each category. Total population and region analyses enabled the development of descriptive statements about applicant attitudes and behaviors. Furthermore, specific policy recommendations with respect to marketing and admissions strategies were developed.

The methodologies described herein represent a minimal cost institutional research effort, which enable most institutions to study the dynamics of student yield and to develop policy recommendations to address concerns defined by the student yield research.

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A TWO PHASE MODEL FOR ACADEMIC PROGRAM EVALUATION

Debra G. Klinman
Thomas R. Collins
Office of Institutional Research
Mercer County Community College
Trenton, New Jersey

INTRODUCTION

Academic program evalution--its definition, goals, and methodology--has long been an area of concern and controversy among educators. Certainly, it is one tool that can be used to help effect data-based decisions concerning the distribution of academic resources. All institutions of higher education must necessarily expend a large proportion of their available resources to support their unique complement of academic programs. Therefore, in this era of shrinking resources, it is becoming increasingly important for institutions to develop and implement effective strategies for academic program evaluation.

Among the many models for program evaluation that have been developed and documented, the "decision-maker" model has gained a great deal of acceptance. Essentially, this model places the evaluator at the service of the academic program decision-maker, who provides the framework and parameters within which the examination of program viability will proceed. That is, the process of program evaluation is an essentially cooperative effort--one which draws upon the expertise of the researcher to generate systematic data, and the expertise of the academician to interpret and utilize these data.

The current paper presents a detailed methodology for implementing such a cooperative model for academic program evaluation. This model, which has been in use at Mercer County Community College for the past several years, follows a two-phase annual cycle. First, during the Fall semester, all of the College's academic programs are routinely described and compared quantitatively. Performance standards are established for a set of twelve criterion variables (called "indicators"), and each program is examined in relation to these standards. This descriptive, standardized, data-based effort is called the *monitoring phase* of the annual process.

Next, during the Spring semester, any programs that have fallen below acceptable levels of performance on a substantial proportion of indicators are identified and recommended for more in-depth examination. During this *evaluation phase*, recommendations for program improvement are formulated and implemented by the academicians who are most directly involved in structuring the program (i.e., faculty coordinators, division chairpersons, and so forth). Because of the cyclical nature of the annual evaluation process, the success of such strategies will be measured automatically during the subsequent semester's monitoring phase.

This type of annual, two-phase system is suggested as one approach to program evaluation. It is by no means the only possible approach, and it has its limitations. Nonetheless, it has proven successful in a community college of some size (nearly 9,000 students) and considerable academic diversity (45 associate degree programs and 10 certificate programs). Advantages of this system include the following: It provides objective, timely, comparable data for academic self-assessment and decision-making; it eliminates the need for costly in-depth evaluations of programs which are performing at essentially successful levels of effort; and it helps promote the continual improvement of a diverse curriculum by maximizing the institution's investment of its necessarily limited academic resources.

METHOD

Program Monitoring Procedures

Indicators of Program Performance

During the first phase--program monitoring--data are collected and analyzed across a standardized set of twelve criterion variables, called "indicators." These indicators were developed with considerable input from both the research and the academic perspectives. They allow for direct programmatic comparisons in areas of effectiveness, quality, and cost. For example, as compared with the performance of other programs during the same academic year, monitoring data can highlight strengths and/or weaknesses in a particular program's ability to attract and retain new students with appropriate entry-level skills, provide adequate opportunity for student success in program-specific courses, and prepare sufficient numbers of program graduates for relevant employment or continued education.

In order to provide a comprehensive and well-rounded description of program functioning, the monitoring process involves the collection of data elements throughout the full academic cycle. First, indicators describe the entrance of new students into the program. Then, several measures monitor performance throughout the Fall and Spring semesters. Finally, a range of indicators are used to assess program effectiveness at the time of graduation--even following graduates into their pursuit of post-Mercer employment and additional education.

The complete list of indicators in current use is as follows:

1. New student enrollment, full-time
2. New student enrollment, part-time
3. New student basic skills (English, reading, math)
4. Enrollment in program-specific courses
5. Student success in program-specific courses
6. Full-time retention rate (Fall to Spring)
7. Cost per full-time equivalent student

8. % of enrollees who graduate
9. Mean QPA of graduating students
10. Satisfaction expressed by graduating students
11. Graduate plans (employment/continued education in field)
12. Graduate followup after 4 years (employment/continued education)

This list, of course, is not exhaustive of the data collection possibilities; nor is it necessarily optimal for intact replication by other institutions of higher education. However, it does present a model for employing a range of measures, and for defining a variety of performance criteria against which every academic program within the institution can be consistently and objectively assessed.

Data Collection and Analysis

The collection of monitoring data is the responsibility of the Office of Institutional Research, and it proceeds through the Fall semester of a given academic year. This requires the operational definition of all indicators, the identification of data sources, and the manipulation of raw data elements as soon as they become available. Indicators, which describe new students, are always based on *current* Fall semester data; all other indicators incorporate data elements from the *previous* academic year.

Once all of the monitoring data have been collected for each academic program, they are prepared for statistical analysis (i.e., coded and keypunched) and then entered into statistical analysis. To ensure against the potential bias of interpreting related measures as if they were independent, all data are entered into a bivariate correlation (using SPSS PEARSON CORR). Table 1 describes the statistical relationships among the twelve indicators now being used at the College.

Next, using SPSS FREQUENCIES, the distribution properties for each indicator are examined in order to establish standards for acceptable performance. These standards, which must discriminate effectively among the College's many

Table 1

Correlation Among Indicators: Monitoring Phase

Indicators	Correlations 2.	 3. a.	 b.	 c.	 4.	 5.	 6.	 7.	 8.	 9.	 10.	 11. a.	 b.	 12. a.	 b.
1. New full-time enrollment	.32	-.12	-.23	-.18	.36*	.03	.18	.05	.24	.04	-.19	-.09	-.40	.37	-.02
2. New part-time enrollment		-.30	-.41*	-.51**	.30	.00	-.03	-.52***	.18	.00	-.27	-.07	-.47	.18	-.46
3. New student basic skills															
a. English			.91***	.66***	-.25	-.02	.04	.41**	.27	.11	-.01	-.13	.11	-.01	.16
b. Reading				.74***	-.25	.07	-.04	.44**	.16	.20	.09	.02	.16	.05	-.08
c. Math					-.18	.14	-.07	.33*	-.11	.20	.18	.01	.13	.11	.76*
4. Program-specific enrollment						-.14	-.17	-.30	-.18	.11	-.19	.16	-.12	.08	.29
5. Program-specific student success							-.12	.00	.42**	-.18	.05	.20	.01	.48*	.74
6. Full-time retention								.24	.15	.08	-.15	-.08	.02	.07	-.49
7. Cost per FTE student									.31*	-.17	.11	.07	.25	.02	.28
8. % enrollees graduating										-.06	-.26	.06	-.17	.01	.05
9. Mean GPA of graduates											-.26	.17	.05	-.15	.42
10. Satisfaction of graduates												.00	.39***	.13	-.64
11. Grad plans															
a. Employment													--	.53*	--
b. Education														--	-.33
12. Grad followup															
a. Employment															--
b. Education															

* p<.05
** p<.01
*** p<.001

curriculum areas, must also remain essentially consistent from year to year to preserve the capability for analysis of change-over time. Standards in current use at MCCC are presented in the headers of each column of Table 2.

Summary Data Matrices

For each of the College's academic divisions, a summary data matrix is prepared,which displays program-by-program performance levels in relation to each monitoring indicator. To facilitate the interpretation of these data matrices, all instances of program performance which fall below standard on any of the twelve indicators are highlighted (i.e., such data entries are marked with an asterisk). Table 2 presents a sample data matrix, illustrating the format used by the Office of Institutional Research to present its findings to the academic decision-makers at MCCC.

Each data matrix also provides a program-by-program summary of overall performance. That is, all available data elements are tallied so that a percentage of below-standard indicators can be obtained. On a College-wide basis, those programs that show the most substantial need for attention are recommended for more in-depth evaluation. As a general guideline, programs are recommended for evaluation when 40% (or more) of their available indicators have fallen below acceptable levels of performance. For example, this guideline would certainly suggest a more in-depth examination of the functioning of "Program A," which is shown on the sample data matrix as falling below standard on fully one-half of its available performance indicators (see Table 2).

Monitoring Report

A full set of divisional data summaries--and a list of all programs where these monitoring data suggest the need for further examination--are prepared by the Office of Institutional Research. This Monitoring Report is submitted to the Academic Dean for review and subsequent distribution to appropriate

Table 2

Sample Data Matrix: Monitoring Phase

Division: Z

Indicators and Standards

	1	2	3			4	5	6	7	8	9	10	11	12	11	12	Program Summaries		
	New Enrollment		New Student BSPT			Unique Courses							Transfer		Career				
Programs	Full-time (≤ 50% goal)	Part-time (<20% goal)	Mean English Score (< 59.0)	Mean Reading Score (< 57.0)	Mean Mathematics Score (< 57.0)	Mean Enroll per Credit (n < 5)	Student Success (IE-1 .70)	FT Return, Fall—Spring (< 55%)	Cost per FTE Student (≥$2800)	% Graduating (<10%)	Mean Graduating QPA (QPA<2.70)	Graduate Satisfaction (≤75%)	Grad Plans Contin Educ (≤75%)	Grad Followup, Related Ed (≤65%)	Grad Plans Job in Field (≤75%)	Grad Followup, Related Job (≤65%)	# Indicators	# Below-standard Indicators	% Below-standard Indicators
A	97%	NA	68.0	67.4	69.7	7	.63*	21%*	3824*	8%*	3.24	57%*	83%	IN	NA	NA	10	5	50%
B	93%	75%	65.4	64.9	62.4	16	.76	66%	2613	10%	3.19	67%*	NA	NA	40%*	50%*	12	3	25%
C	88%	76%	56.6*	57.8	57.7	37	.82	57%	2714	12%	2.73	86%	NA	NA	93%	100%	12	1	8%
D	45%*	20%	75.0	73.3	69.3	10	.82	60%	1745	19%	2.68*	100%	NA	NA	50%*	IN	11	3	27%
E	103%	10%*	66.9	65.4	73.6	4*	.95	56%	2300	16%	3.47	86%	100%	100%	NA	NA	12	2	17%

Note. * indicates below-standard performance on specified indicator.
IN indicates insufficient data.
NA indicates not applicable.

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division chairpersons and program coordinators. In this way, the monitoring procedure provides every academic administrator with an objective, annual description of program functioning in each of the College's curriculum areas.

Although the monitoring process was designed to highlight those programs that require the most intense expenditure of evaluation resources, responsible faculty and staff can use these data to assess a program's strengths as well as its weaknesses. Furthermore, changes from year to year can be documented, trends can be followed, and areas of concern can be identified as they emerge for prompt remediation.

Program Evaluation Procedures

As previously described, a Monitoring Report is prepared by the Office of Institutional Research and forwarded to the Dean for Academic Affairs. This report, and all supporting data matrices, are subsequently distributed to appropriate division chairpersons and program coordinators.

In cases where the results of the monitoring process have indicated the need for a more in-depth examination of a given academic program, a comprehensive review procedure is initiated. First, the program coordinator is asked to respond to the findings of the Monitoring Report and offer his or her explanations for all instances sub-standard program performance. In conjunction with this explanation, the program coordinator may recommend either: 1) additional fact-finding (i.e., further monitoring); 2) modifications designed to remediate areas of below standard program performance; or 3) the initiation of a full-scale program evaluation. The recommendation of the program coordinator is then forwarded to the chairperson of the division for review. As appropriate, the chairperson provides additional comments and suggestions and indicates follow-up activities to help achieve recommended outcomes. All of the program reports within the division are compiled, and these composite reports are forwarded to the Academic Dean.

The Dean then determines, on the basis of all pertinent input, his or her priorities for immediate, full-scale program evaluation. The Dean determines the scope of each evaluation as well as the personnel commitments that will be required. Each program evaluation is conducted by a committee whose membership includes, as appropriate: the program coordinator, other member(s) of the program's faculty/staff, the division chairperson, and support staff from such offices as Institutional Research and the Testing Center. If necessary, the assistance of outside consultant(s) may also be recommended.

Responsibilities are assigned, a time-line is established, and evaluation activities are implemented throughout the Spring semester. The evaluation process results in a final report to the Academic Dean specifying appropriate follow-up actions (e.g., major modifications, program suspension, program elimination). At the end of the academic year, the Dean reports to the President on the status of all programs that have been involved in the evaluation process. Since the entire two-phase process is ongoing and annual, the effects of all change strategies are automatically assessed during subsequent cycles of data collection and analysis.

A CONTEXT FOR ASSESSING QUALITY AND EXCELLENCE IN HIGHER EDUCATION

Paul Wing
New York State Education Department

Higher education is entering a period of profound change. This is particularly true in the Northeast where outmigration of both population and industry has compounded the impact of national demographic trends.

The most often discussed changes are related to numerical declines in college enrollment based on declines in the traditional college-age population. These changes by themselves, which may involve declines of 20 to 25 percent in total FTE enrollment, will pose significant problems for higher education, but some other changes will compound the problems for many institutions. Among the more important changes will be:

- Increases in the proportions of the college age population from low income and minority groups. In many major cities, the minorities will become the majority, placing new demands on colleges.
- Changes in the skills brought to postsecondary education by high school graduates. Adjustments in expectations and programs may be necessary for many institutions.
- General economic pressures. Unless reversed, the trend toward greater restraint in public spending compounded by the general decline of the Northeast will make careful planning of programs essential.
- Increased competition for students. The declining traditional college-age population will increase competition for students, both within higher education and with a variety of non-college alternatives (e.g.,

the military). This will increase the need for clear understanding of missions and roles.

- More rapid changes in technology and jobs. Increased needs for training and education for new jobs and careers seems inevitable as the pace of change in society increases. This will require creative responses by the higher education community.

These and other changes in the 80's and 90's will severely challenge planners and administrators in higher education. Most institutions will have to make significant changes. Some will become smaller; some will alter their programs; some will shift their clienteles; some will do all three. Some will go out of business. Designing and orchestrating the strategies and the programs to accomplish these changes, whether at the department, campus, state, or national level, will be a difficult task. And the task will be made more difficult because much information and many procedures required for effective planning are simply not available.

The thesis of this paper is that the major shortcomings are in the area of measures of academic quality and excellence. Some general principles and approaches for dealing with these shortcomings are suggested below.

STRATEGIES

The prospect of significant declines in enrollment has created a stir among planners and others concerned about the allocation of resources. High on their lists of concerns are how best to shift priorities and alter programs. At least two approaches to these problems are possible.

1) Save and strengthen the best. This is a positive approach stressing excellence.
2) Eliminate and modify the weakest. This is a negative approach stressing minimum standards.

In practice, of course, there exists a continuum of possibilities between these two extremes, and mixed strategies are desirable. These will enable a state or an institution to make changes that move the entire system toward a more desirable situation.

Many questions remain to be answered, however, before one can talk about such strategies. More specific indicators and measures must be identified and defined; and actual assessments of quality must be performed. The remainder of this paper will deal with these three basic problems.

LINKING QUALITY AND EXCELLENCE TO MISSION

One of the major barriers that exists relative to the assessment of quality and excellence in higher education is the limited frame of reference in which the assessment is dealt with. Whether because of lack of understanding, or fear of misuse of the information, or simply lack of need or incentive, many planners and policy makers have very limited perspectives on quality. For them Harvard and MIT and Berkeley represent the pinnacle, the holy grail to be sought after. Most colleges have no business trying to emulate these prestige institutions, and fortunately, more and more of them are not trying to. The problem is that there do not exist generally agreed on standards and measures of quality and excellence for other institutions. And it makes no sense to apply the same standards to Hudson Valley Community College or the College of St. Rose as one would apply to Harvard.

Compounding this problem is the fact that quality assessments must be made in the context of the missions of the institutions and systems. Suppose, for example, that the missions of XYZ college were to provide above average students with a sound liberal arts education, to provide remedial and other compensatory assistance to a select number of minority students, to maintain a highly regarded physical education program emphasizing swimming and gymnastics, to assist all graduates to find suitable jobs or graduate school situations, and to work closely with local government and business in providing services and trained employees. One could then develop specific indicators and measures corresponding to each of these specific missions. Data could be gathered to establish benchmarks for subsequent longitudinal studies, target achievement levels could be established, and if other institutions with common missions were willing, interinstitutional comparisons could be made.

Sweeping statements of mission such as "teaching, research, and public service" are neither relevant nor useful to the task of assessing quality. They provide no basis for distinguishing among the many diverse institutions that exist in the U.S. and in the Northeast. Nor do they help to isolate those elements of the missions of colleges that could meaningfully be compared and contrasted. Nor do they provide a basis for assessing the extent to which a "system" of institutions truly provides a complete set of opportunities to a group of constituents and avoids unnecessary duplication.

Ultimately, improvements in the assessment of quality will require concurrent development of better concepts and ideas about institutional mission. The development of a comprehensive typology of specific mission statements would be a valuable aid to planners at all levels. Such a typology should be designed to clarify the respective roles of the various partners in the planning process, from the academic departments up (or down) to state and Federal agencies.

APPROACHES TO QUALITY ASSESSMENT

A search of literature suggests that there are four major approaches to the assessment of quality and excellence in higher education: reputational studies, peer reviews, empirical ratings, and student evaluations. Each approach serves a useful purpose, but none would suffice as the sole basis for quality assessment. Each is described briefly below.

Reputational Studies

Reputational studies are probably the most widely discussed of the approaches to quality assessment. The reports by Cartter (1966) and Roose and Anderson (1970), for example, received a great deal of publicity when they were released. These studies are based on rankings of programs in particular disciplines by leading practitioners in the respective fields. They have traditionally been geared toward rating elite programs and prestige institutions on a national scale.

While this approach is doubtless valuable to the institutions and programs involved, it is not a viable approach for all situations. They could possibly be replicated on a state or regional basis for different types of institutions, and in fact this is probably done informally all the time. However, as a model for extensive use in quality assessment, this approach does not appear to be that useful.

Peer Reviews

Peer reviews are one of the most widely used approaches to quality assessment today. Regional accrediting bodies use this approach as do the New York State Education Department and others. Generally these start with a self-study by the institution followed up by site visits and formal evaluations.

Typically peer reviews are keyed to identifying aspects of an institution that do not meet minimum standards as in the periodic reviews by Middle States or the New York State Education Department. The Doctoral Review project of the New York State Education Department focuses on the high end of the spectrum (i.e., excellence) for specific disciplines viewed both collectively and individually.

Peer reviews are probably the most effective approach to quality assessment, assuming, of course, that the reviews are handled professionally and the programs and institutions make changes in response to the evaluations. They are also expensive and time consuming, which has led to five-year review cycles and other such cost-saving devices. The fact that colleges are serious about quality helps to eliminate problems in the intervening years.

Empirical Ratings

The cost of peer reviews and the increasing capabilities of computer-based information systems are opening up a new approach to quality assessment, referred to here as empirical ratings. This approach, with proper support from peer reviews, provides a basis for a paper review or desk audit of selected characteristics of programs or institutions known to be related to quality.

Based on the values of specific quantitative indicators of quality, a rating or score can be developed for an institution. The choice of indicators is critical to the process, and this design problem should receive considerable attention and subsequent validation. One of the strengths of the approach is that a wide variety of indicators can be developed using currently available data. These can be selected to reflect performance in a wide range of the possible missions of an institution.

Student Evaluations

Often overlooked in quality assessments are the students. Although some are skeptical of the judgment of students, their opinions are definitely relevant to the question of quality. And for certain types of institutions and programs, students may be the best source of information and insights. They can speak with authority on the setting, the ambiance, the delivery of services, and their satisfaction with programs and courses. Many can also offer valid comments on the substance of the programs and the effectiveness of instruction.

Student evaluations, because they involve surveys and questionnaires, are generally expensive to obtain. Statistical sampling can bring the costs down, but cost is likely to be an important factor regardless. It may be possible and reasonable to charge some of the expense back to public relations, since ultimately this kind of activity is likely to generate good will among students.

SPECIFIC INDICATORS AND MEASURES OF QUALITY

Implementation of the general concepts laid out above, will require specific indicators and measures of achievement and performance. If the development and use of these indicators is experience and expertise in their collection, compilation and interpretation will come quite naturally. In the beginning, however, the problems of identifying the measures, validating their relevance to quality assessment, and incorporating them into specific planning and management processes are laborious tasks and time consuming.

Generally speaking, subjective judgment will be the initial basis for selecting most of the items to be considered and setting any absolute or relative evaluation standards. Then begins the process of determining whether the selected measures and standards reflect reality. This validation process has to be done by comparison of the empirical statistics with judgments of experts. It will lead through a process of augmentation, selection, redefinition, and refinement of both measures and interpretations. If followed through systematically and thoroughly, the process can lead to the basis for an effective review process. It is even possible to automate certain aspects of such a process, using a computer to compute the statistics corresponding to each of the measures, and computing a composite performance "score" based on the specific values of the statistics when compared to values deemed "acceptable" by experts.

If such an approach is taken, particularly by a state agency as part of a regulatory process, it should be supplemented by site visits and other opportunities for dialogue and discussion to ensure that subtle factors and intangibles are properly accounted for, and of course, to continue the validation process. The quantitative "paper review" should serve as a trigger mechanism to a more thorough and careful review process.

CONCLUSIONS

Higher education faces some difficult problems in the 1980's and 1990's. Institutions must prepare to orient to new clienteles and missions. Ultimately, they may have unenviable tasks like hiring three new faculty members in one area and, at the same time, firing six others in other areas.

Effective means of assessing quality and excellence in the context of the specific missions of a campus (or a state agency) will be enormously useful to planners and policy makers in this kind of environment. This means hard work and a willingness to tackle difficult, even threatening, problems; but without reliable and open assessment of quality there is great risk that public support for higher education could be undermined.

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A FRAMEWORK FOR CONSIDERING QUALITY IN HIGHER EDUCATION

Patrick T. Terenzini, Director
Office of Institutional Research
State University of New York at Albany

The recent and rapid development and implementation of management information systems in higher educational institutions represent a substantial step forward in the study and management of colleges and universities. These systems have given us considerable capability and flexibility for describing the human, financial and physical resources of our institutions and for understanding how they have been invested. They have made possible elaborate simulation models, facilitating wiser resource allocation as well as more thorough, informed institutional planning. But our increased facility for answering questions about "How many . . .?" has also led to a set of higher-order, not-so-easily-answered questions.

Now that administrators, legislators, trustees, parents and others know something about the cost of various educational programs, services and activities, it becomes an entirely logical and reasonable next question to ask about the worth, value, benefit, or quality of the program, service or activity. How "good" is it? How effective is it? Does it accomplish what it was intended to accomplish? Is the accomplishment worth the cost? These questions are not all of the same genre, however, and it will be well to differentiate among them at the outset.

Olscamp (1977, 1978) has suggested that administrators, in dealing with an institution's publics, face at least three different issues: 1) questions of "accountability," which, ". . . for most purposes, . . . means two things: proof of cost-effective use of public resources, and proof that the institution is doing what it promises to do" (Olscamp, 1978,

p. 504); 2) the public justification of higher education; and 3) "the question of what a good, that is, high quality, professor, program, or institution is" (Olscamp, 1978, p. 504).

Questions of an educational program, service or activity's intrinsic worth or value ("Is it any good?"), or its instrumental value ("What is it good for?"), would appear to deal with matters relating to the "justification of higher education" and to require metaphysical, non-empirical responses or proofs. As Bowen (1979, p. 21) has noted, ". . . there is no way to solve questions of value by easy quantitative formulas. There is no way to side-step intuitive judgment and criticism, with all the pitfalls they entail."

Questions of whether something accomplishes what it was intended to accomplish, and of whether the accomplishment warrants the cost, seem clearly to be matters of accountability, as Olscamp has defined it. But the matter of interest here is neither accountability nor justification in higher education, but, rather, the development of some means for thinking and talking about (and possibly for estimating) "quality" in higher education.

Olscamp states that "To say what quality means in higher education is overwhelmingly difficult. . . . To describe quality, we are required to describe the types or classes of things with which we are concerned and then to explain what we mean when we say that people or examples among the classes or types are good, better or best, among them. These descriptions make the matter of quality in higher education mind-boggling" (1977, p. 197). Few would dispute such a statement, and yet one might reasonably argue that judgments about quality in numerous and varied areas of higher education are made daily, albeit, perhaps, on poorly defined or understood grounds. Whether judgments of quality are made seems hardly in dispute; what is at issue is the validity and reliability of the evidence used to make those judgments. Moreover, it seems to be a reasonable enough expectation that one who makes claims or judgments about quality also be able to say something about what those claims or judgments mean, what they involve and how they were arrived at.

In a subsequent article, Olscamp describes what he calls "languages of quality" and then argues that "none of these languages of quality can be translated into quantitative symbols" (Olscamp, 1978, p. 505), concluding that academic program quality cannot be quantified. He also notes, however, that "To say that the quality of a thing cannot be described quantitatively does not mean that the thing cannot be scored, graded, or tested for the presence or absence of that quality" (p. 505).

In both articles, Olscamp suggests that judgments of quality can be properly made only by persons conversant with the "languages of quality," the disciplinary experts, the faculty members, who know what "good" is in their fields. The implication of this belief (although one suspects Olscamp never intended it that way), is that "quality" (and the language thereof) is ineffable, known intuitively only by the initiate.

Whether quality is quantifiable is a matter beyond the scope of this paper. More germane is the issue of whether the language of quality is known only intuitively. One suspects that such is not the case, that, rather, the language is not widely known because its structure has never been explicitly delineated, its vocabulary never clearly defined.

The purpose of this paper is to describe a modest conceptual framework within which it seems reasonable to think and talk about "quality" in higher education. Perhaps it will help make the language of quality more explicit. Whether the framework will facilitate the estimation of quality or the differentiation of varying levels and degrees of quality among like things remains to be seen.

Underlying Assumptions

Webster's Third New International Dictionary of the English Language defines the "quality" of which we generally speak when describing some feature of higher education as a "degree of excellence; grade, caliber; . . . degree of conformance to a standard; . . . inherent or intrinsic excellence of character or type: superiority in kind" (Webster, 1966, p. 1858). Implicit in this definition and, one might reasonably argue, in judgments of "quality" is some notion of comparison. Some reference point, scale or standard appears to be at least implied in the meaning of "degree" or "grade, (or) caliber," and a "standard" is explicit in the second portion of the definition.

The standard's nature, properties or characteristics are less important, here, than the fact of its existence. The comparative standard may be: 1) intuitive, some personal sense of the Ideal (or the Mediocre) that serves the individual or group as a touchstone or benchmark; 2) normative, based on formal, standardized testing or on the collective judgment of presumed experts in a field; or 3) competency based, the standard being the achievement of specified performance levels for various tasks or activities. But whatever its nature, some notion of a standard is assumed to be present when judgments of quality are made.

A second assumption fundamental to the proposed model is that judgments of quality are, finally, a metaphysical problem. Such judgments or decisions may be facilitated by empirical evidence, but they are not amenable to logical, statistical, or mathematical proof. The best evidence may inform a judgment, but it cannot determine it. Evidence may be compelling, but ultimately it cannot be conclusive. In the last analysis, decisions of quality or value are private and personal, or, in the case of groups, consensual.

A PROPOSED MODEL

Before proceeding further, it is important to note that the model makes no assumptions about the purpose of an assessment or judgment of quality. Such considerations will, of course, have a significant bearing on the topics of consideration or discussion within the model's structure, but the applicability of the model is not constrained in any way by questions of purpose.

Levels of Assessment

Figure 1 suggests that assessments of quality can be (and typically are) made at one or more of at least three levels of aggregation. The first, and most discrete, level is that of the individual. Those about whom judgments of quality are being made may be students, faculty members, administrators, or other institutional staff members. Students, for example, may be judged at the time of admission, in individual academic courses, and at various other times or for various purposes. (When judged collectively, as in admissions literature describing the "quality" of the students at an institution, then the assessment is at the institutional level.) Although assessments of individuals (either as individuals or in groups) are typically made of students and faculty members, judgments can be (and are) as easily made of any person or group in an organization, from custodians to president.

The second level of assessment in the model is the "academic or administrative unit." This general level may also include academic programs. At this level, the unit(s) being assessed may be considered either separately or collectively, (excluding, of course, an institution-wide collection).

	COMPONENTS OF ASSESSMENT		
LEVEL OF ASSESSMENT	DOMAIN, OR DEFINING ELEMENTS	QUALITY INDICATORS	REFERENCE POINT/SET
INDIVIDUAL (E.G., STUDENTS, FACULTY, STAFF)			
ACADEMIC OR ADMINISTRATIVE UNIT			
INSTITUTIONAL			

Figure 1. A framework for thinking about quality in higher education.

For example, one may apply the model to considerations of quality in a single academic or administrative department (say, physics or an office of institutional research), or one may consider together the academic departments comprising a college or school within a university. The same, of course, applies to administrative units (e.g., the physical plant department separately, or together with the several units comprising the division of administrative affairs).

The third, or "institutional," level of assessment is clearly the most aggregated and represents something of an overall summary, a macro-judgment that takes into account the more specific and discrete judgments made at lower levels of assessment.

Components of Assessment

The second dimension of the model, the "Components of Assessment," summarizes the elements that comprise (or at least should be included in) any discussion or consideration of quality, at whatever level. The first of these, the "Domain, or Defining Elements" of an entity, refers to the essential traits, characteristics or properties of a person, program, unit or institution which would, when possessed, justify a claim to quality. For example, if one wishes to assess the "quality" of graduating students, what are the personal, intellectual, social, vocational, ethical, and other properties or characteristics we would be willing to accept as constituting a "senior of quality"? Put another way: what are the distinguishing characteristics, the defining properties of seniorhood, the quality of which are to be examined? These might include, for example, the level of personal independence, knowledge of content and methods in the major field, critical thinking ability, oral and written communications skills, ethical or moral development, and so on.

This portion of the model is analogous (although not identical) to questions of content validity in testing and measurement. Recognizing that we probably cannot ennumerate all defining traits or characteristics of someone or something of quality, we need to be sure that we have at least identified a representative sample of those traits. If we cannot be all-inclusive, we must try at least for comprehensiveness and representativeness.

Similarly, in the case of an assessment of an individual faculty member, the defining elements or properties might include (but by no means be limited to) teaching load, ability to involve students in the intellectual material of courses, ability to help students learn and perform at peak levels, frequency of publication in refereed journals, conceptual and methodological rigor of research, steady pursuit of a well-defined line of inquiry, contributions to professional associations, activities to support local community organizations, and so on. Clearly, the list could be both more extensive and more specific than that given above. The point, here, is not to specify what the defining elements are or should be, but rather to highlight the need for some such clear specification before judgments of quality are made or even discussed. The same applies, of course, at both the unit and institutional levels of assessment.

Having identified those traits or properties that would, when possessed, "define" an entity of quality, the next step is to select "Quality Indicators," reflectors of the level of attainment or degree of excellence achieved for each of the Domain/Defining Characteristics. What will be the nature of the evidence assembled for each component or element and upon which a judgment or assessment will be partially based?

To use an earlier example: if one is concerned with assessing the quality of recent graduates, and one of the characteristics of "quality graduates" has been determined to be "knowledge of content and methods in major field," precisely how will the level of attainment on this trait be measured or otherwise indicated? Will some standardized achievement test be adopted? Will faculty devise and administer some oral examination? How will an individual's (or a group's) standing or rank on this attribute be reflected? The same sorts of questions apply, of course, to other "defining elements." How will a graduate's personal independence, critical thinking ability, moral or ethical development, and so on be assessed? What will be the indicators of accomplishment?

At the academic department level, indicators of quality might be summaries (statistical or otherwise) of the individual faculty members' standings on the indicators selected as reflecting quality at the individual level. If, for example, one indicator of teaching ability is scores on some instructional rating form, then the department level indicators might include summary statistics describing the typical or average performance of the department's faculty, as rated by the students they taught. The same sort of summarizing process might, of course, be applied to individual indicators of research performance and community service. The precise nature of the unit indicators, clearly, follows at least in part from the selection of individual defining elements, properties or characteristics. And as with individual traits, their selection is constrained by the ability of the social sciences to measure the trait under consideration.

Assuming that some set of defining characteristics or properties has been identified and accepted as a reasonable representation of the domain of traits that constitute quality or excellence in some area, and assuming the selection of acceptable measures or indicators of level or degree of excellence on each of those defining properties, then one must be concerned with the selection and nature of an appropriate "Reference Point or Set." As noted earlier, comparison is assumed to inhere in the definition of "quality" as that word is normally used in describing persons, programs, services, or activities in higher education. A statement about the "quality" of something is a statement about the degree, level, or amount of some trait or property that has a priori been accepted to be one of the defining traits of quality. Given that, with reference to whom or what will one judge the quality, the degree of achievement or level of attainment of whomever or whatever it is that is being assessed? What will constitute the benchmark?

In the case of assessing the quality of graduating students, how are we to judge their knowledge of content and methods in their major fields? How are the data from the indicators to be interpreted? Are the graduates' scores or ratings on some standardized test to be compared with those of earlier graduates from the same institution? With those of other students currently at the same institution? With those of graduates from other institutions? Which other institutions? If one relies on indicators that are based on numerical test scores, the absolute value of an individual's or group's score is meaningless in the absence of knowledge of (comparison with) the typical or average score on the same test and some indication of the dispersion of the test scores. If the indicator is some panel's summary judgment or rating, then the panel's standard is at least implied--a comparison with others taking the same examination, a belief about how well one should do on the examination, and so on. The point here is the importance of recognizing the presence of some standard in statements about quality and the importance of understanding exactly what that reference point or set is, as well as the implications of using it, for whatever purposes.

Similar problems must be addressed in evaluating the "quality" of organizational units, whether academic or administrative. Can academic departments in the same institution be compared with one another without running afoul of fundamental disciplinary differences? Is it not invidious to compare an art or music department and an economics department with respect to the average student-faculty ratio? credits produced? average class size? research or scholarly accomplishments? Perhaps departments should be compared with like departments at other institutions. But how are those other institutions or departments to be selected? Conceivably, a department might properly be compared with itself in previous years.

SUMMARY AND CONCLUSIONS

The purpose of this paper was to describe a conceptual framework within which thinking and discussions of quality (and possibly its assessment or estimation) can take place in higher education. The model assumes, first, that some form of comparison is inherent in both the definition of quality and in judgments about it. That is to say, to ascribe quality to something is to have compared it--explicitely or implicitly, consciously or unconsciously --with something else, with some standard. The model assumes, further, that judgments about quality are, in the last analysis, personal (in the case of groups, consensual) and non-empirical. Empirical evidence may afford grounds for judgment, but the judgment itself is beyond empirical proof.

Presented graphically, the model is a 3 x 3 matrix with "Levels of Assessment" and "Components of Assessment" as the underlying dimensions. The three levels of assessment include the individual, academic/administrative unit, and the institutional levels. The components consist of the domain or defining elements necessary to support a claim of quality; the quality indicators, or reflectors, of degree or level of excellence or attainment for each defining trait; and finally the reference point or set--that with which whatever is being judged is compared: the benchmark.

Considerable development work and progress has been made at the individual student level (and at the institutional level, so far as students are concerned). The National Center for Higher Education Management Systems (NCHEMS), the American College Testing Service (ACT), and the Educational Testing Service (ETS) have produced monographs, articles, taxonomies, instruments or various other materials relating to the "Defining Elements," "Quality Indicators," or "Reference Point/Set" cells of the model.

At the unit level of assessment, we have a generalized sense of what the defining elements of quality are for academic departments (and colleges or schools within universities), although there is probably a need for increased specificity. A more serious problem exists in trying to determine the defining elements of quality among administrative units. The dilemma is directly related to the fact that, unlike academic units, no two administrative units perform similar functions or services. All academic departments teach, do research, and so on, but what functions does a payroll office perform or share in common with the accounting office? physical plant? the computing center?

This dilemma extends into the area of quality indicators. If among academic units the problem is in selecting appropriate indicators, for administrative units the difficulty is in identifying indicators at all, or ones that are not unique to a particular unit or function. And in the absence of some set of common indicators for administrative units, comparisons are complicated, if not precluded entirely: how can one compare the "quality" of the administrative offices listed above? The identification of defining elements, quality indicators and reference points/sets for administrative units would appear to be one of the major areas of need for development if we are to describe adequately the quality of these areas of institutional operations.

As noted earlier, another crucial area in need of development concerns the reference points or set of academic units. With whom or what can any given academic unit be compared in order to judge its quality? Other departments at the same institution? Like departments at other institutions? Itself over the last several years? There is, as yet, no totally satisfactory answer.

At the institutional level of assessment, progress appears to be moderate. As noted above, the components of assessment at this level are reasonably well-developed so far as describing student quality is concerned. Beyond that area, however, considerable work needs to be done. Institutional reference points or sets appear to be an area in particular need of development. Although state- and campus-level administrators (and many faculty and students alike) are prone to compare the quality of their institution with that of others, there is, as yet, no satisfactory means for identifying those other institutions with which it is meaningful to compare oneself. Comparisons appear currently to rest on personal preferences rather than on any systematic, objective determination of institutional similarity. Articles have recently begun to appear (e.g., Terenzini, Hartmark, Lorang & Shirley, 1980; Smart, Elton & Martin, 1980) suggesting ways for identifying institutions that resemble one another more than other institutions, and the American Council on Education currently offers a service that provides lists of "peer institutions" for those colleges and universities requesting to know their peers. Despite these efforts, however, considerable work remains to be done. The traditional institutional typologies are simply inadequate for present purposes, and there appears to be no greatly-improved successor on the horizon.

In sum, the assessment of quality in higher education is clearly a highly complex area and one requiring considerable conceptual work. In times of tight resources for higher education, however, administrators and faculty have few alternatives to documenting or demonstrating the quality of the work they perform. In the absence of such evidence, however primitive, higher education's only hope for continuing support would appear to rest with a continuation of the public's beliefs in the importance and value of higher education.

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ASSESSING QUALITY AND EXCELLENCE IN HIGHER EDUCATION: THE MUTUALLY COMPLEMENTARY ROLES OF CAMPUS AND STATE

Edward R. Hines
Assistant Professor, Educational Administration
State University of New York at Albany

As recently as 1974, Kenneth Boulding spoke of the "management of decline" at a Convocation of the Regents of the University of the State of New York (1975). Now a generation of articles, commentaries, and a slowly expanding empirical base give us more substance in answering the question, "How (can) reduction take place not only in an orderly, but an imaginative fashion, while preserving the quality of our advanced education intact?" (Kennan, 1979, p. 173). The tandem issues of maintaining or increasing quality during enrollment stability and decline, and the role of the state in this process, will be among the most critical challenges of the 1980s.

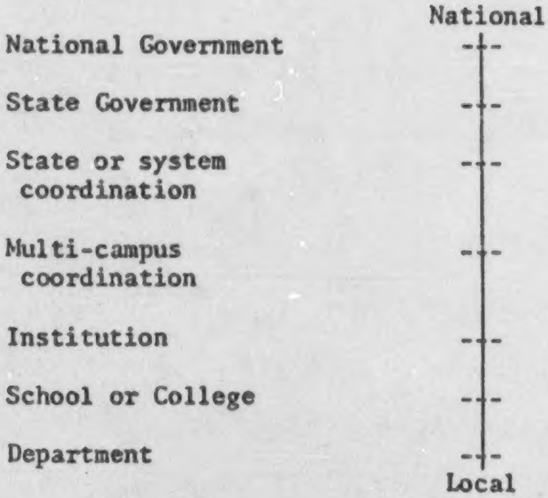
The purpose of this brief paper is to identify a series of potential roles for a state higher education agency in helping institutions with these resource issues, to describe several conceptualizations which underlie these potential roles, and to explain how it might be possible to create mutual complementarity between campuses and state agencies.

"Every state has a board, commission, or staff that is responsible in some measure for higher education" (Muirhead, 1976, p. i). The growth in the number of state agencies for higher education, and in particular their expansion of authority and power, has been described in the literature (Berdahl, 1971; Millard, 1976). What is of interest, here, is the nature of state agency involvement in higher education. The general role of the agency may be viewed as having four parts: planning, program registration, governance, and finance. The planning role includes not only statewide master planning for postsecondary education, but the requirements which are linked to the "1202 commission," empowered by federal legislation in 1972 to function as the higher education planning body for the state. The registration function traditionally has been relatively non-controversial, but more recent state experience in deregistering and terminating academic programs has shown this area to be a hotbed of controversy between institutions and agencies (Middleton, 1980a, 1980b, 1980c; Scully, 1980). The state's role in governance may be vital, as in the case of state boards of education with higher education responsibilities or state boards of trustees, but the role of the state agency in governance has been minimal. Last, the states vary in regard to financing higher education. Some state agencies are not involved, others are involved pro forma, others have powers of review of budgets in public institutions, and some have the power either to add or delete items from institutional budgets.

More important than the existence of this authority as a matter of statute, however, is the way in which the powers are utilized by the agency. In discussing the varying powers of the state higher education agency, the concepts of academic authority and coordination are useful.

Hierarchies of Academic Authority and Coordination

Academic authority in colleges and universities has evolved in a particular way, resulting in a dual hierarchy of guild-like faculty authority, and administrative and policy-making authority (Clark, 1978a; Van de Graaff, 1978). By viewing academic authority along a vertical continuum, we have the following:


National
National Government
State Government
State or system coordination
Multi-campus coordination
Institution
School or College
Department
Local

Among the distinguishing features of American higher education, two are of particular interest in this discussion. One feature is that of horizontal differentiation with great expansion of universities, colleges, community colleges, and other institutions of collegiate status. On a vertical dimension as shown above, there has been a considerable expansion of authority at the institutional and state levels, and this is the second distinguishing feature of higher education. At the institutional level, there is the growth of the "new university executive" as a visible representative of academic authority in a "community long suspicious of hierarchy" (Lunsford, 1968, p. 87). The primary purpose of some academic departments is to train these specialists in college and university administration and management. Beyond the campus, there is even more impressive growth, and at the state level (other than government), growth is manifest in at least four areas. First, there is the administration and organization associated with multi-campus institutions, most notably universities and community colleges. The second area of state-level growth pertains to statewide coordinating bodies for higher education. The third area is the regional board, more prevalent in some foreign countries than in the United States. Fourth, there are municipal higher educational systems, such as the City University of New York or the Chicago City Colleges.

Authority has expanded considerably at the state level. The literature does not generally differentiate among different types of coordination, other than to distinguish coordinating from governing boards. One author identified four distinct types of coordination, each with multiple facets (Clark, 1978b). Bureaucratic coordination is related to formal administrative hierarchy, and it could apply equally at institutional or state levels. Bureaucratic coordination may result in "layering," where there is an increase in levels of formal coordination. It may result in "jurisdictional expansion" where the scope of responsibilities can increase and become more comprehensive. More personnel may be added, the number and type of administrative specialities can increase and become more complex, and rules and regulations may increase in number, complexity, and impact.

Coordination can be political in at least two respects. There can be greater coordination involving formal government, as well as coordination involving interest groups. State government has both presence and power in public higher education, and in some states in private higher education as well. Local governmental influence in higher education has increased especially at the two-year college level. There is not only an increase of formal government, but also an increase of institutions and systems acting like political interest groups; Clark termed this "increased corporatism" (p. 82).

A third type of coordination is professional coordination, involving the activities of the core teaching or research staff. Examples include academic unions, professional associations, and research organizations. The fourth type of coordination is market coordination, and in higher education the most obvious example is the student as consumer. Institutions can be regarded, also, as operating in a power market where "units struggle against one another within the broad frameworks of state authority" (p. 89).

Organizational Processes for Assessing Quality*

Quality is an imprecise and protean term. In higher education, its use has been the focus of a continuing debate which has centered on the term, quality, as well as the organizational means by which it is assessed. Our concern is with the latter topic, and in particular with the limitations of reputational studies, with accreditation, and with program review. Each of these "organizational" topics warrants a more complete treatment than space permits in this paper.

Despite their limitations, reputational studies continue to be used, and reacted to, with fervor (Astin & Solmon, 1979; Rice, Solmon, 1980). Several of the more major studies are regarded as "landmark" if for no other reason than they are the only studies available. There were the efforts by Cartter (1966) and Roose and Anderson (1970) pertaining to graduate education. Blau and Margulies focused on professional schools (1973, 1975). More broadly, Ladd and Lipset wrestled with the global notion of "well-known" universities (1979). The defects of such studies are equally well-known, and they include imprecision, time-lag problems, and misleading conclusions. One critic noted that reputational studies were "terminologically unclear and methodologically defective, their conclusions unwarranted, their effects unfortunate" (Entman & Paletz, 1976, p. 577).

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* This section draws upon Edward R. Hines and Nancy J. Howes, "Quality, Accreditation, and Program Review in Higher Education," unpublished manuscript, SUNY-Albany, August, 1979.

Another organizational process for assessing academic quality is accreditation. A time-honored process, there are three aspects of accreditation that reflect the basic character of higher education. Accreditation is a process of peer review, not unlike tenure and promotion decisions which are grounded in the principle of review by one's peers. Another basic tenet of accreditation is that it is voluntary, or at least non-governmental. There are sanctions for those who do not participate, because we are in a period where only accredited institutions may qualify for federal and state funds. The third basic tenet of accreditation is its focus on academic or institutional quality.

There are multiple problems of increasing magnitude with accreditation. The monetary costs of accreditation include both membership fees (calculated on a FTE student basis) as well as substantial "out of pocket" costs for site visitors, and these include processing fees, honoraria, and expenses. The indirect monetary and economic costs for colleges and universities may be even greater. The number of administrators and faculty involved directly in preparation for accreditation visits, the person-hours involved in this process, and the voluminous documentation necessary represent a significant outlay for an institution undergoing accreditation. Perhaps the most troublesome problem, however, is the lack of impact on quality, the very term the process is designed to improve (Jacobson, 1980).

The third organizational process for assessing quality is program review, either sponsored by or involving governmental agencies. Academic program review is generally of two types (Lyons, 1979). The review may be diagnostic, or "developmental" as noted by Clark (1979), where information is generated in order to provide data about programmatic strengths and weaknesses. Indeed, some observers insist that diagnostic reviews can be conducted with mutual respect, an absence of contention, and need not lead to program discontinuance (Hill, Lutterbie, & Stafford, 1979). Interestingly, the same state in which this was advanced, in 1980, moved to reorganize higher education with accusations about "political trade-offs," program discontinuance, and campus mergers (Middleton, 1980a, 1980b). The Governor in that state vetoed a bill saying that "it would have put too much responsibility in the hands of the state legislature" (Middleton, 1980b, p. 2).

The second type of program review seeks to establish the status of a program relative to standards about performance and quality. The key issues, however, are what will be done as a result of the evaluations and more specifically, is the proper role of a governmental agency to ensure minimum standards or to make broader judgments about quality in general? The extremes of this continuum appeared to be represented at the 1980 meeting of the Southern Regional Education Board where higher education representatives wanted programmatic decisions made "in a decentralized governance system," and governmental officials called for "strong statewide coordinating or governing boards" in order to stop "short-term competition, confusion, and inefficiency" by governors and state legislatures (Middleton, 1980c, p. 7).

Academic Program Assessment

It would appear, based on the foregoing discussion, that academic program quality and its assessment involve multiple considerations. Specifically, it is advocated that there are multiple measures of academic program quality, there are multiple objectives to assessing quality, and there are several purposes to quality assessment.

There are multiple measures of quality. Virtually any review of accreditation documents reveals at least six measures of quality: institutional mission, academic program, faculty, students, educational outcomes, and resources. While accreditation visits may call for teams to examine more than six areas, most of the individual areas can be collapsed into these six measures. Similarly, the guidelines for the review of doctoral academic programs, as defined by the State Education Department in New York, include six categories: program design and implementation, program structure, financial support, faculty, students, and adequacy of facilities and services (1976). Thus, any approach to quality which is limited to any one measure is also limited to what can be generalized from that single measure. Examples would include the research productivity of faculty as the estimate of program quality and GRE test scores as the measure of student quality.

Similarly, there are multiple objectives in assessing quality. Three are suggested, and they include program diagnosis for self-improvement, attaining minimum standards, and enhancing academic program quality. More broadly, there may be more than one purpose for making judgments about academic program quality. At least two purposes are identified, and both deal with placing a value on the academic program. One approach seeks to determine intrinsic value, while the other focuses on value in context (Lincoln & Guba, 1980). Judgments about intrinsic value can be made by using either comparative or absolute techniques, but both rely on intrinsic value or merit. Context-related value can be termed worth. By definition, worth varies with the evaluator, it varies along a time line, and it varies according to the criteria used. A 2 X 2 matrix is instructive:

		MERIT	
		HI	LO
WORTH	HI	1 The leading programs of an institution which help give it distinctiveness and reputation while meeting external needs	3 Programs of high visibility and consumer demand which should be improved in order to remain viable
	LO	2 Programs of high intellectual or social value which should be retained for institutional enhancement	4 Programs of limited merit and worth which appeal to isolated and idiosyncratic needs

Figure 1. A matrix of academic program quality using merit & worth criteria.

What is compelling about the distinction between merit and worth is the fact that college officials (especially faculty) tend to focus on the concept of merit when talking about quality as well as deciding who should make judgments about quality. It is easy to get trapped by the myopia that merit is a unitary concept, referring only to intrinsic value, and about which only certain people (faculty) are qualified to make informed judgments. It is argued in this paper that such is the case, but only in cells 1 and 3 as shown in the matrix. In these cases, judgments are desired pertaining only to intrinsic value.

When the purpose shifts to value in context, then someone or agency in the environment external to the institution should be in a position of making judgments about the value in relation to external need, demand, and anticipated future considerations. In the matrix, this instance occurs in cells 1 and 2.

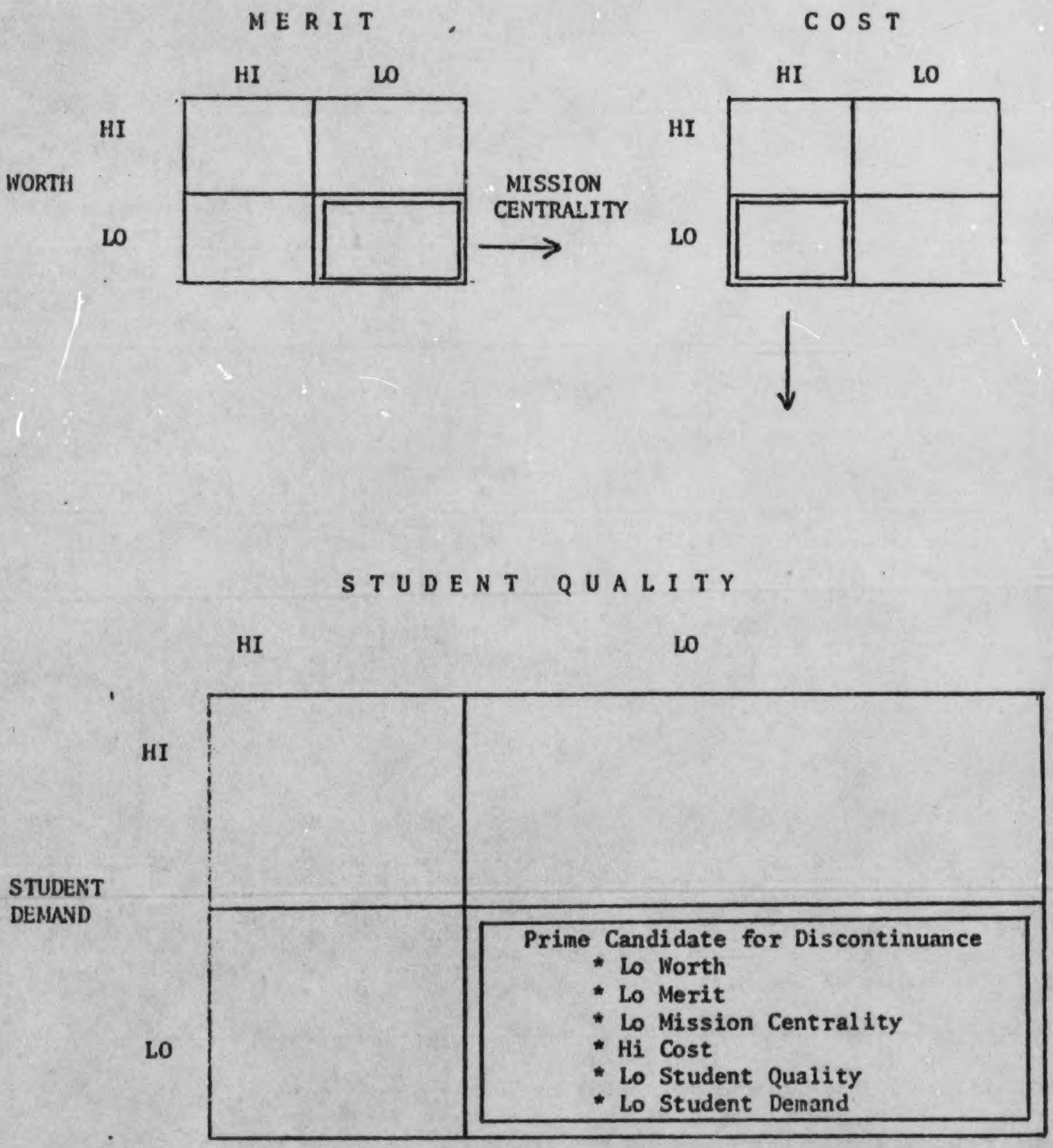
A "zone of congruence" occurs in the matrix in cells 1 and 4. We could project that both institutional officials and external representatives might achieve agreement about academic programs demonstrating "Hi" merit and worth, as well as those demonstrating "Lo" merit and worth. The former might serve as the leading academic programs of the institution, while the latter could be prime candidates for reduction or elimination.

Problems may occur in the other cells. Hi merit, Lo worth programs (cell 2) might be those valued for intellectual excellence, support to other higher demand programs, or because of anticipated changes in demand. Within the institution; however, those representing such programs may have a difficult time convincing representatives of higher demand programs (cell 3). These programs are those with strong external relations, having sufficient client base, but judged to be of lower merit within the institution. Such judgments about merit might be either comparative or absolute. A program might be compared with other similar programs on a statewide or regional basis. On the other hand, a program could be judged relative to some unchanging (absolute) standard of excellence. Hi worth, Lo merit programs might have a "competitive edge" over programs falling in other categories. Such programs are prime candidates for new faculty lines, additional resources, and greater institutional support.

Our discussion and Figure 1 were concerned only with the two variables of merit and worth. These were chosen because of the conceptual work of Lincoln and Guba (1980). Institutional decisions about program discontinuance are much more complex, taking into account a series of variables as shown in Figure 2. A series of three matrices illustrates a decision-making process which enables consideration of three sets of variables in a stepwise sequence. Initially, a decision is made using the criteria of merit and worth. The "Lo-Lo" cell is then examined using the variables of program cost and the centrality of the program to the mission of the campus. Hypothetically, we arrive at the realization about a program which is judged as Hi cost and Lo in mission centrality. This program is tangential as well as expensive to sustain. Taking the highlighted cell in the matrix, we then consider that program using two additional variables of student quality and student demand. The program judged as having Lo student quality and Lo demand, in sum, would be a prime candidate for discontinuance. That hypothetical program, using our three-step decision process, was judged to have:

* Lo worth and Lo merit
* Lo mission centrality and Hi cost
* Lo student quality and Lo student demand

The decision process outlined in Figure 2, of course, is oversimplified. Actual institutional cases will be much more complex with additional considerations taking place, including political bargaining. By placing numerical values on a continuum representing each variable as well as weights for selected varibles of greater importance, computer analysis can be done. However, there may be a value in an institution-wide body following this decision-making process


MERIT
HI
LO
HI
WORTH
LO
MISSION CENTRALITY
COST
HI
LO
HI
LO
STUDENT QUALITY
HI
LO
HI
STUDENT DEMAND
LO

Prime Candidate for Discontinuance
- Lo Worth
- Lo Merit
- Lo Mission Centrality
- Hi Cost
- Lo Student Quality
- Lo Student Demand

Figure 2. A decision-making process using three pairs of program variables

in stepwise fashion. Individual circumstances will predetermine which variables to include (community colleges will differ from research universities), which variable sets to consider in tandem (perhaps merit and student quality should be considered jointly), and therefore, how lengthy the process will become. It is quite possible that a process executed more slowly, rather than computer analysis, will lead to benefits such as important discussions about critical matters in the institution which need to incorporate value positions as well as political bargaining.

These matrices suggest mutually complementary roles for both campus and the state agency. Each has a vital role in the assessment of academic program quality. The state agency cannot and should not make judgments about intrinsic value (merit); that is the province of the institution and its faculty. The state agency has a necessary role in assessing worth in relation to existing and projected statewide circumstances. Each major actor should recognize and respect the role and responsibility of the other organization. Institutions are unreasonable when it is claimed that decisions should be made using the unitary criterion of merit, about which only faculty can make judgments. Equally, state agencies should not only allow but foster institutional autonomy by encouraging campuses to formulate a decision-making process and follow it regarding the areas of intrinsic value, student demand and quality, and the relationship between academic programs and institutional missions.

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TOWARDS A DEFINITION OF EXCELLENCE IN HIGHER EDUCATION

Donald G. Hester
Assistant in Higher Education
State Education Department, University of the State of New York

INTRODUCTION

Wing (1980) has described four approaches to the assessment of quality: Reputational studies (Roose and Anderson, 1970, Cartter 1966), Empirical ratings (New York State Education Department), Peer reviews (New York State Education Department) and Student evaluation. These are widely divergent approaches, with very different assumptions behind each direction. Hines et.al.(1973) reviewed the literature on quality accreditation and program review, and they concluded:

> In American higher education, the term quality is an imprecise and protean concept... in summary, it appears that there is no commonly accepted definition of quality in higher education, and the means by which quality is operationalized is highly variable among colleges and universities (p. 1).

Before there can be effective assessment there must be definition. How is it that something so basic to education is so shrouded in uncertainty? The explanation partly lies in the unfolding historic process, but first of all it is important to consider the present situation and see the context in which definition and then assessment is necessary. This paper will consider the present transition that faces higher education, discuss the historic background to defining quality, and suggest a definition of quality, relating it to mission.

Higher Education in Transition

Higher education has been operating in a relatively stable policy environment over the past 20 years. This was a period of expansion spawned by the cold war, the GI bill, and great hopes for greater social equality through education. The coming five years, however, are likely to produce policies which set new directions. Early warnings of shrinking student pools (Silber, 1975) have been reinforced by more recent ones (Crossland, 1980). Discussion and awareness has been further increased by counter-scenarios describing new clienteles and initiatives (Frances, 1980). Implicit in this debate is a profound change of direction for postsecondary institutions; this is a time of transition. The future is likely to see a more diverse student body and perhaps additional roles for higher education with older age groups.

The role of administration, whether federal, state, or institutional, will shift from consideration of quantity to quality (Kayson, 1980):

> By contrast, the decisions the states have to make in the next generation will have an impact on the quality, rather than the quantity of higher education (p. 21).

The past forty years have been characterized by incredible growth, not only in the population of the United States, but the proportion receiving some form of higher education. Whatever the outcome in the future, the progressively shrinking traditional student cohort (18-22 yrs.) will be the engine that drives change.

Also contributing to the evolutionary process will be economic constraints. During the last decade inflation has created many pressures upon higher education. This has resulted in reduced salaries of faculties in real terms, and resulted in deferred maintenance for a number of campuses. It has been possible in the past to use growth to offset these effects, but what little fat there was in the system has now been taken out. A further reality is that education is not in the political limelight as it was twenty years ago. Daniel Patrick Moynihan (1980) has suggested that the focus of political concern has moved from education to environmental issues in the 70's, and now is shifting again to energy considerations. The net effect of these and other changes will be pressures on quality.

Historical Background to Defining Quality

Goals for education have changed considerably over the years. This may be seen by contrasting those advanced by Abraham Lincoln in 1832: Morality, Sobriety, Enterprise and Industry (Quigley, 1980); with those of the New York Regents (1980), namely Excellence, Access, Diversity, and Effective Use of Resources. In this period of one hundred and forty-eight years many developments and changes have taken place. For example, access has ceased to be the privilege of a few and is now considered a right for many. Quigley (1980) and Volkwein (1980) have given succinct reviews of the history of college education. By reflecting on the unfolding drama, it is possible to identify three distinct phases in the process of historic development which have influenced definitions of quality. Each reacted to the pervasive mood of the period in society at large. The three historic phases may be labeled as elitist (prior to Morrill Land Grant Act of 1862); meritocratic which emerged next as the result of the growth of industry and influences of German universities; the G.I. Bill introduced after World War II accentuated this last phase, leading ultimately to the current emphasis on open access for all (egalitarian).

The result of all this has been the creation in the United States of perhaps the most diverse system of higher education anywhere in the world. Is it surprising that there is a definitional problem over the nature of quality? The more so, since none of the three phases has ever eclipsed entirely the previous ones, but that all three are to be seen today and continue to exert influences. The elitist, meritocratic, and egalitarian strands have blended and interacted to form a "triple helix" of influence, a kind of educational D.N.A. At one time it would have been easier to identify the elitist strand with the Ivy League schools, the meritocratic with the superior state centers, and egalitarian with perhaps the community colleges. Today, however, these generalizations do not hold because the strands are interacting and creating new variations, even within particular institutions. It may be further projected that the coming decade will bring many changes. Greater effort will be directed toward "non-traditional" students, and new areas of service will be identified. It is reasonable to expect the egalitarian momentum to continue, but there will still be significant elements of elitism and merit. An adequate definition of quality must therefore embrace the entire spectrum of possible missions of colleges.

There are powerful collective presuppositions which permeate most concepts or notions of quality. These suppositions often translate into some kind of exclusive superiority, further fed by notions from the free market. This has created an expectation that quality is simply being the best, (that is, the first) and that is what defines quality. Such notions are elitist legacies which are very limiting. For a culture to survive, it needs an inner vitality which is genuine self expression. Our culture is now pluralistic as are the wide variety of people and organizations education serves. A fresh if not new definition of quality is urgently required.

A Theory of Multiple Influences on Quality Definition

From this very short overview of history and epistemology, it is possible to advance a theory and suggest factors that will influence the future. Some support for these hypotheses will be offered and then a definition of quality will be advanced. The theory may be stated:

American higher education owes its origins to the elitist schools of Europe, particularly the classical English models of Oxford and Cambridge, in the founding, for example, of Harvard. The first phase of development was therefore elitist. There was also a secondary influence from Germany emphasizing research. The second phase was a response to social changes and the emphasis gradually shifted to meritocracy. The third phase, the contemporary one, emphasizes equal opportunity and is egalitarian in nature. However, all three strands continue to exist and have interacted and form the complex background for defining quality.

In addition to these underlying themes, there are a host of potential factors that may influence higher education in the future. Four hypothetical factors are listed here for the purpose of this discussion:

a. The movement through the three phases outlined in the theory, can be expected to improve the literacy rates in the total population, as well as increase the rate of high school graduation and the percentage of students going on to college.

b. The average academic ability of college students may decline temporarily as a wider cross-section of the population participates in college. (It is possible that scores will eventually improve as a result of a more widely educated generation becoming parents.)

c. Wider participation in higher education makes a definition of quality less a matter of a single criterion like reputation, but produces a broader set of needs, which require a variety of criteria to clarify definition.

d. The three strands (elitist, meritocratic, and egalitarian) still exist but interact with, and modify one another.

If this theory and set of hypotheses is valid, then there are implications for policy. Perhaps the most important is that quality must be flexibly defined and resources be appropriately allocated. Articulation and consistency between secondary and postsecondary sections of education would also be highly desirable, if not essential.

SUPPORT FOR THE HYPOTHESES

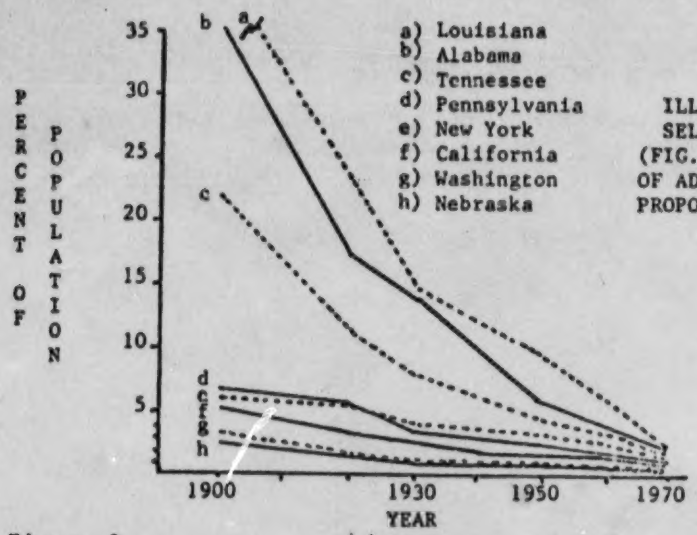
An examination of the literacy rates through the course of this century demonstrates the remarkable success in creating access to education. Figure 1 displays data for a selection of States. The problem was originally more severe in the South, but there has been a steady convergence with the North. It is tempting to project the lines and speculate at what point only a learning inability problem will be left.

Figure 2 shows how over the period of the last forty years there has been a dramatic change in the proportions of people completing various levels of college and school. Figure 3 presents a contrast between 1940 and 1970 for various years of schooling. These displays suggest the reasonableness of the hypotheses advanced, because of the increased participation in education. It should also be realized that during this time span the cohort of students considered in figures 2 and 3 increased in size from seventy-five million to a little under one hundred and twenty-five million. This would suggest that the educational system has not only been able to accept vastly increased numbers, but also accept a much more extensive role in society. The whole center of gravity of the total system has moved from eighth to twelfth grade, with a very marked extension of postsecondary education -- a growth of four hundred percent in forty years, to the point where presently, thirty percent of the over twenty-five years cohort, has some college education. This is strong support for the hypothesis that the system today is much more egalitarian than ever before.

Test Scores

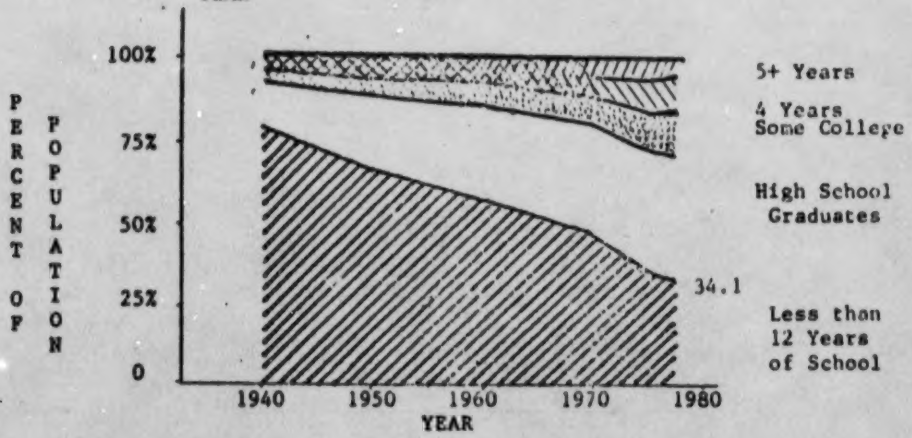
The steady decline of average test scores (S.A.T.) in recent years is a well reported fact, and is often interpreted to indicate a decline in quality. It is not the present intention to be complacent here, but to

Figure 1.



ILLITARACY* OF THE POPULATION IN SELECTED STATES AGES 15 AND OVER (FIG. 1), AND EDUCATIONAL ATTAINMENT OF ADULTS IN THE U.S. (FIG. 2 & 3) BY PROPORTION AND PERCENT AGES 25 AND OVER

Figure 2.



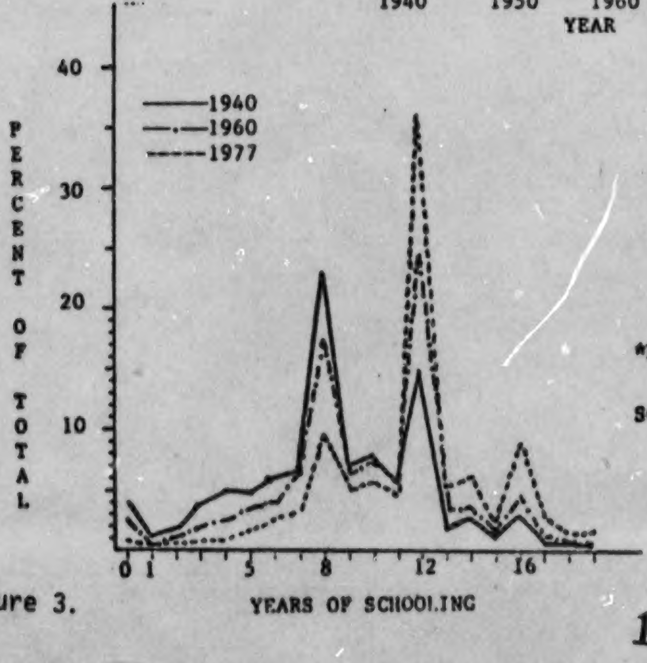


Figure 3.

*Defined as no years of school.

SOURCE: U.S. CENSUS OF THE POPULATION REPORTS AND SURVEYS (JJB 10/80) simply suggest it is a predictable and consistent corollary of the data presented. As more students of lower ability attend, the average ability naturally declines. The discussion would be more useful if quality were more clearly defined; certainly the loose way the subject is discussed does considerable injustice to the democratization of education. It cannot be overlooked that prior to 1850 there was not as great a need for education. Agricultural and industry were largely manual. Today, society is becoming increasingly technological, and an educated work force is essential to the effective functioning of our post-industrial society. Eckland (Bidwell/ Windham, 1980) has noted the extreme difficulty in interpreting the declining scores because school populations have changed so much over the years.

> I think irrefutably, that between two thirds and three quarters of the SAT score decline between 1963 and 1972 was due to changes over these years in the high school population, but even more importantly to changes in the percentage of high school seniors at various ability levels who chose to take the SAT (p. 106).

Eckland's conclusion is consistent with the changes that Figure 3 presents.

A New Definition of Quality

The relevance of finding a definition and effective measurement of quality can be deduced from some recent remarks of the former U.S. Deputy Commissioner for Higher Education, Joseph P. Cosand (1980):

> Downturns can frighten faculty, administrators, and boards to the extent that expedient actions will be taken in direct conflict with the stated role of the college. This will affect quality, as well as admission and retention of students. I believe it will measurably affect the image of the college in the eyes of its supporters--be they State officials, legislators, members of the board of governors, donors or parents. I believe education must be concerned with excellence and never compromise its creditability (p. 5).

We have seen three historic phases in the history of American higher education; elitist, meritocratic and egalitarian, with all three very much alive today. The boundaries among them, however, are not clearly defined. And the changes coming in the next decade, with greater emphasis on "non-traditional" students and new areas of service, will make the boundaries even fuzzier. It is reasonable to expect the egalitarian momentum to continue. The elitist and meritocratic schools will probably also continue to enjoy some success. A definition of quality must therefore embrace the historic and contemporary spectrum of reality. It should be obvious that an elitist definition of quality is appropriate only to schools which are elitist in their mission. However, it would be absurd to suggest on the other hand that a community college does not offer a quality program. There are high and low quality community colleges, just as there are high and low quality prestige institutions. The quality of all schools should be scrutinized using appropriate criteria.

To enable an educational program to be carried through successfully, a variety of resources are necessary. The nature of these resources and the way they are used affect the quality of the program. This is consistent with a system model of input, process, and output. This notion can be illustrated by using a specific measure of outcome and examining the levels of the various inputs in specific cases. Muncrief (1974) used this process to investigate the performance of New York associate degree graduates in relation to the registered nurse licensing examination. A concern existed that success rates were below the national average. It was hypothesized that the programs might account for this in part. The study identified schools that produced high, medium, and low success rates in the licensing examinations, and then examined a selection of programs from each level to identify differences. The investigators were able to describe very clearly the effective schools and their characteristics, and concluded that the programs that were doing well on the licensing examination were also "making noteworthy attempts at providing a quality program." The fact that quality programs attract better students made quality assessment more difficult. It was suggested that leadership, quality of faculty, curriculum, facilities, evaluation, climate, and continuous planning were significant variables. These probably apply to other college situations as well.

Quality is a measure of effectiveness of a program or activity. It results from the application of curriculum, faculty, and resources, to a particular student body in an ordered manner, through the combined interaction of the institutional process. The process receives its direction and intention from the institutional mission. It reflects the complex interaction of all parts of the system.

The next step, a very difficult one, is to reduce this concept from a verbal definition, which recognizes the many subtleties in individual campuses and programs, to a formula that will allow quantification and therefore measurement:

$$\text{Quality} = \frac{f(\text{effort})}{f(\text{mission})} \text{ or } Q = \frac{f(E)}{f(M)} = \frac{f(\text{actual outcomes})}{f(\text{intended outcomes})} \times \begin{array}{l}\text{corrections}\\ \text{for inputs}\end{array}$$

It is now possible to utilize the conclusion of the Hines (ibid.) paper that there are six recognizable elements to quality in the literature; namely, institutional mission, the academic program, faculty, students, educational outcomes and resources. These may be rearranged and incorporated in the formula. Further work will be required, but they might arrange as:

$$Q = \frac{f(E)}{f(m)} = \frac{f\ (\text{Academic Program; Faculty; Resources})}{f\ (\text{Institutional Mission; Students; Educational Outcomes})}$$

This might be quantified, for example:

$$Q = \frac{1000}{1000} = 1 = \text{optimum quality}$$

In practice, a raw score would be derived that would usually be less than one. This new score might need to be adjusted for the mission component being less than one; E should not exceed M because this would indicate E is being applied without sufficient regard to the process.

This definition and formula is deliberately in a form that is universalistic and allows for elitist, meritocratic, or egalitarian definitions of quality. This is accomplished by building clauses into the definition of mission, which is part of the denominator, and if fulfilled will be reflected in the numerator in either faculty or resources components. Theoretically at least, it should be possible to use this approach to contrast institutions of different types. Reliability testing of the indicators should be undertaken by grouping institutions and validating against traditional measures, if they can be identified, or judgments.

IMPLICATIONS FOR QUALITY IN THE 1980's

If the broad thesis of this paper is accepted, that the movement of education is increasingly to the egalitarian, then other probabilities should also be taken into account. In a number of places by 1990, the "nontraditional student"will be in the majority. For example, in New York City the present minority groups for high school graduates are projected to be the majority, accounting for 65 percent of high school graduates.

The present contraction of the secondary schools may also follow through to higher education, creating pressures similar to those the schools are currently facing. The definition of quality advanced in this paper is concerned with the appropriate use of resources applied to a particular situation. Quality results from appropriate uses. Further policy issues arise from this focus on effective use:

1. Articulation between secondary and postsecondary education is increasingly essential to meet the needs of a more diverse student body.

2. Resources are critical to quality. Student equivalency formulas will not be appropriate to the needs of the coming decades, if contraction takes place.

3. Quality of teaching cannot be assumed by the possession of terminal degrees. Educology must be part of the process of education and teaching itself should demand more recognition in institutional life (Ohio has already recognized this).

4. Disciplinary issues at both levels will require a new management approach to meet the needs of a more diverse student body.

5. Society will continue to change rapidly and education should play its part in forming the new culture. Its role could pass to the new information systems which technology is providing.

6. Curriculum will need ongoing appraisal with relevant objectives and basic attitudes of faculty appropriate and willing to respond to a rapidly changing student population.

7. Class sizes will need careful scrutiny and the need for respecting the individual learning needs of students will be essential in effectively addressing a more diverse student body. This is particularly true with older students.

8. Cohesive programs that articulate right through both systems will be necessary for a number of students. It is probable that innovative programs like "Head Start" would relieve many problems, if followed through more continuously. Funding is often too short term and should be more continuous.

New York State Education Department Project

The New York State Board of Regents has established excellence as the major goal in the 1980 Statewide Plan and is directing resources to research on this concern. The Ford Foundation has funded the planning phase of a project which is reaching out to thirteen states in the Northeast. Indicators of Excellence is the title of this work. Three elements are involved; quality, fiscal health, and institutional diversity. It has both institutional and state level thrusts, the objective being to stimulate self assessment and improve responsiveness and encourage cooperation in the coming decade.

Conclusion

Not only must there be a response to the concern to preserve quality, but active, creative awareness is essential. Cooperation and flexibility will be needed at all levels: federal, state, and institutional. Keppel (1980) has suggested that the institutions are the prime focus of activity:

> More important than state and federal action is action by the institutions themselves. Their future is mostly in their own hands (p. 5).

Clarity, information, and a clear sense of mission are essential to this task. This new definition of quality can help focus effort in appropriate directions. The first consideration is a clear, well defined mission, and a planned use of available resources:

> The institutions will make rational decisions, it is hoped, in their own self interest if they have the facts to interpret. And the state will make choices based on public interest, once again if it has the facts about the role of higher education in the furthering of that public interest. (ibid. p. 5)

The years ahead are a crucial transition for the educational community but as Zeik (1980) put it, Watershed does not need to be Watergate!

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STUDENT PROFILES FOR ATTRITION STUDIES

Jean M. Stern
Director of Institutional
Planning and Research
Siena College

For the past three years, Siena College has conducted several studies of its advisement system. What started as the development of a manual for faculty advisors progressed to an Ad Hoc Committee on Advisement and Retention composed of teaching faculty advisors, the Dean of Students, the Academic Vice President, the Director of the Counseling Center, the Director of the Evening and Summer Sessions, a Higher Education Opportunity Program staff member, students, and the Director of Institutional Planning and Research. What began as an assessment of the academic advisement system in response to a somewhat negative evaluation from a Graduating Senior Questionnaire blossomed into a marathon committee meeting where groups, ranging from Admissions to Alumni, who were involved in counseling students personally, academically and financially were invited to share with the Advisement/Retention Committee and each other the role they perceived themselves playing in the college's advisement and retention processes.

Siena quickly progressed from a simple consideration of academic advisement to a linkage of advisement with the issues of attrition and retention. This was a logical extension for many reasons. Most of the current advisement literature and workshops place it in this context. In defining the purpose of an advisement program, one posits the discovery of the students' goals, talents and interests and their possible fulfillment in terms of the institution's resources. Most retention studies discuss the necessity of a "good fit" between the student's needs and the institution's offerings. Broadly construed, advisement helps to provide that interface. In addition, colleges and universities have become more sensitive to the desirability of retaining as many students as possible, who would profit from their programs, in light of the declining pool of eligible traditional college age students.

As the committee tackled the Siena advisement system, it broadened the idea of role of the advisor from course counselor to someone who could help acclimate students to campus life and direct them to the school's services as the need arose. In order to fulfill this expanded function, advisors would need adequate information about the Siena student body in general and their advisees in particular. The directors of the advisement program would need information as to what types of programs might be required to service the students.

A comprehensive body of information was not available to the committee, who was especially interested in discovering whether there were special needs of students who were dismissed from the college for academic reasons or who withdrew voluntarily as compared to those who graduated within four to six years after entering the college.

The Study

In an attempt to ascertain these needs, the committee appointed a subcommittee to construct profiles of full-time day students who entered Siena College in the Fall of 1975. Students were classified as either first time freshmen or transfer students and analysed separately. There were 518 freshmen and 224 transfers. Within each group, the students were further divided into those who graduated(for the freshmen, this meant a January, May or August 1979 graduation; for transfers, all who graduated by August 1979), those still attending Siena in the Fall of 1979, those dismissed for academic reasons, and those who voluntarily withdrew from the college. The proportions are as follows:

	Freshmen	Transfers
Graduates	68%	69%
Continuing	4%	3%
Dismissed	7%	7%
Withdrawals	21%	21%
	N = 518	N = 224

In analysing these statistics, we were pleased with the fairly low attrition rate between both groups and the similarity of proportions between both groups. There had been some concern that transfer students might not be as well integrated into the college community and would manifest higher attrition rates. This is not to say, however, that transfers do not have different needs from those of the entering freshmen, so the transfers were always treated as a separate group.

Student profiles were constructed for each of the eight groups over 23 variables taken in part from a checklist, "Information Needed for Study of Institutional Attrition", developed by the Educational Development Center of Baldwin-Wallace College, from conference presentations attended by the Dean of Students and Director of Institutional Planning and from the school's current student records. These variables were:

Reasons for leaving college (Withdrawal form)
Career Choice (Admissions application)
Department Major (Registrar)
Residence (Resident/Commuter - Registrar)
Sex (Registrar)
Transfer Credits (Registrar)
Earned Credits (Registrar)
Attempted Credits (Registrar)
Quality Points (Registrar)
Index (Registrar)
Status (Graduate, Continuing, Dismissed, Withdrawal, Registrar)
Semester of Status (Registrar)
Probation Semester(s) (Registrar)
Hometown Location (Local/Nonlocal - Admissions application)
Hometown Size (Almanac)
High School Graduation Size (Admissions)
SAT scores (Admissions)
Parental College Attendance (Admissions application)
Parents' Profession (Admissions application)
Admission Acceptance Status (Admissions application)
Extracurricular Activities (Admissions application)
Religion (Campus Ministry)
Financial Aid Award (Financial Aid Office)

The information retrieval took nine months of part-time work by a member of the Student Affairs staff who was forced to glean information from the Registrar's computer file and individual student folders, the Admissions Office application files and reports, Financial Aid files and Campus Ministry files. It was hoped by the committee that if any relevant profiles emerged, their characteristics might form the basis for a student master file for future effortless monitoring.

__Student__ __Profiles__

For purposes of space, only profiles of entering freshmen , are presented in this paper. Initial scanning of the profiles marked similar patterns for students graduating within four years of entrance and those who withdrew from the college. Continuing students and those dismissed for academic reasons also showed similar profiles. When controlling for the grade point index of withdrawing students, those with G.P.A.'s less than 2.0 (C) had profiles very similar to the dismissed students and those with G.P.A.'s greater than 2.0 had profiles even closer to the four-year graduates.

Of the twenty-three variables used, twelve seemed most useful for differentiating among profiles:

Reasons for leaving college
Career Choice
Department Major
Sex
Semester of Status
Probation Semester(s)
Home Size
SAT scores
Mother's College Attendance
Parents' Profession
Extracurricular Activities
Residence

Students who withdrew from Siena gave different emphasis to reasons for leaving college. Those who were struggling academically cited personal (28%), financial (28%) and desired major not offered at Siena (28%) as their reasons. Those who left Siena with an index higher than 2.0 gave desired major not offered (26%), financial (21%), desire to transfer to another college (17%), and desire to move closer to home (14%) as their reasons. Both groups make financial problems a major reason for leaving, which is not surprising since Siena is a private college whose tuition, although not extremely expensive, is still higher than that of the state university system. When comparing a combined response of desired major not offered and desire to transfer, students with the higher index show a greater dissatisfaction with the college with a combined proportion of 42.5% compared to 33% for those with an index less than 2.0. Students in academic difficulty cite personal reasons more often, but whether these are a result of academic problems or a cause for them needs further study.

Most freshmen come to Siena with a professional career in mind. There is no difference between those who graduated (61%) and those who withdrew (62%). Academic dismissals had lower aspirations to professional careers (50%), while the continuing students had a higher commitment (81%). Perhaps this type of career goal was a major motive for students to remain with their studies despite the circumstances which caused them to fall behind their class.

Department majors showed some interesting patterns. Five departments graduated 70 per cent of the students (Accounting-26%, Marketing/Management-17%, Finance-11%, Sociology-9% and Political Science-7%). Comparing the continuing students with the dismissals, it appears that continuing students are more likely to have majors in our Business Division while dismissals have a greater tendency to major in Arts Division departments, with undecided Arts majors accounting for almost one-fourth of the dismissals. Whether these differences are a result of interdivisional policy differences or career choice options requires further study. Withdrawing students do not tend to concentrate in any one department or division, although 13 per cent of the withdrawals are undecided Arts majors whose lack of academic goals may contribute to dropping out.

The entering freshman class had a male to female ratio of 70:30. Despite this high proportion of males, we did not find a high proportion of female withdrawals as predicted by Astin (1964) and Cope et al (1971). In fact, sex made little difference for withdrawals. Where it did make a difference was in the dismissals, with male students accounting for 91 per cent of the dismissed. This lopsided ratio could have many reasons - motivation, bias, admission selectiveness, and requires further monitoring.

When analysing the semester when the student reaches dismissal or withdrawal status, we noticed that students are more likely to be dismissed within their first two semesters (72%) as compared to those who withdraw from the college (47%). Over 80% of both groups have left by the end of their fourth semester.

After the first semester, continuing students have a higher percentage of students on probation than dismissals. This may occur because most students are dismissed after the freshman year, while the continuing students struggle on. Withdrawing students have a slightly higher percentage of students on probation per semester than graduating students. However, this distinction disappears when controlling for grade point index.

Siena students are almost equally distributed over the size of their hometowns, with a slight underrepresentation of the suburbs. Graduating students are just as likely to hail from rural areas as from large urban areas. Withdrawing students show little difference over hometown population and do not support the findings of Astin (1975) and Aylesworth and Bloom (1976) that rural students are more likely to drop out. Continuing students have a greater tendency to come from large urban areas and dismissals from medium to large urban areas. Our statistics may be slightly biased, however, since over half of the Siena students come from the Albany-Schenectady-Troy area, which would be considered as large urban by New York State standards.

SAT scores do predict somewhat to the likehood of a student's academic dismissal. However, graduating, continuing and withdrawing students show little difference in average scores.

Siena students are in transition from being a body of first generation college students as shown by the fact that 50 percent of the graduating students, 44 percent of the dismissals and 44 percent of the withdrawals had fathers who attended college. For the continuing students, only 27% had fathers who attended college. Mothers' college attendance showed a similar pattern with the exception of a smaller percentage of dismissed students with college educated mothers.

The parents' profession may give a better clue toward predicting a student's status. Graduating and withdrawing students have a greater tendency to have fathers employed in the professions. Continuing students' fathers have a greater tendency to be managers and dismissed students have fathers in the professions (25%), craftsmen (22%) and a miscellaneous category(22%). Most of the students' mothers do not have a profession. Dismissed students have the greatest tendency to have mothers who are not employed outside the home (62%), while withdrawals have the least percentage (43%) of all groups.

Many studies have shown a positive relationship between extracurricular activity participation and retention (Everett, 1979, Savicki et al, 1970). We did not find this to be true for the continuing students who tended to indicate less interest in extracurricular activities.

The type of activity chosen is perhaps a better indicator. None of the dismissed students indicated an interest in departmental, social or religious organizations, showing a smaller degree of social integration with the college community, although they did participate in athletics and student government to the same extent as the total group of freshmen. Withdrawing students demonstrated much less interest in athletics and more interest in journalisn, debate, and drama than the freshmen as a whole. They show a degree of interest deviance from the group, since athletics plays a major role in student life at Siena and the college did not offer many journalism, debate or drama experiences outside of the student newspaper and a volunteer drama group from 1975 to 1979.

Most of our entering freshmen students live on campus. Continuing students have the highest percentage of commuters (45%), followed by dismissals (41%), withdrawals (39%) and graduates (33%), which tends to give ambiguous support to the proposition that living on campus enhances a students' persistence (Alfert, 1966, Bolyard and Martin, 1973, Astin, 1975, Kuznik, 1975).

Applications

The information from these profiles has many uses for Siena College. First, a final report will be made to the Committee on Advisement and Retention, who will in turn forward it to the Board of Instruction.

Second, the Committee will present the results to the faculty at large to aquaint them with the longitudinal histories of our entering freshmen and transfer classes.

Third, the newly appointed Director of Advisement will have access to the study for tailoring support programs for the students and for training advisors.

Fifth, the profiles point to the need for further study of some of the college's policies, student motivation, and career orientations as they pertain to attrition and retention.

Sixth, as the studies progress, we may develop a body of indicators for the continuous monitoring of our students as they pass through their college experience.

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ADMISSIONS AND RETENTION - STUDENT PERCEPTIONS BEFORE AND AFTER MATRICULATION

Robert Lay, John Maguire and Louise Lonabocker

Boston College

Introduction

A precept for the successful management of institutional enrollments is the careful accounting of student flow - that is, the keeping of accurate counts as student cohorts progress from pre-admission through college and beyond. Many have also come to appreciate the advantages of periodically administering questionnaires to their students at one or more phases of student flow.[1] With this information, colleges have the opportunity to develop a full flow model that systematically links individuals' motivations, perceptions and expectations to behaviors at each progressive stage.

This, if you allow understatement, is an ambitious undertaking -- certainly far beyond the scope of this reported research. We propose, however, to explore the usefulness of one specific application of the flow approach to a practical concern: Why do students drop out? Our goal then will be as much to reconceptualize the problem as to report empirical findings.

Certainly a great deal of useful research has been done on explaining why students drop-out. (See Pantages and Creedon, 1978, for a comprehensive review of the literature). And the subject area does not lack for good theoretical approaches; Tinto's model (1975) has gathered considerable support.[2] Yet, very few empirical studies have been able to explain more than a small percentage of the variation in drop-out behavior. This indicates that either we must admit that retention is one part of student flow that cannot be predicted well or we must look for new or extended perspectives on why students choose to leave.

Compare the problem of predicting retention rates to the task of predicting admissions yields (the proportion accepting an offer of admission). We have found in our own research (see Maguire and Lay, 1981) that around 50 percent of the variability in college decision can be explained using only perceptual variables as predictors.

Coupled with the fact that more than 75 percent of Boston College withdrawals transfer to another college or university, the student flow approach has led us to inquire if it is possible to view dropping-out as a continuation of the college choice process. If so, then the first step is to relate the cognitive processes associated with college choice before matriculation to those processes of college choice after matriculation.

Data Sources and Methods

As is too often the case, an adequate test of these ideas must wait until the appropriate data are available for analysis. While the data on cohorts has been collected on Boston College students, a clean and tested historical file integrating this information is not yet available. The project to design, initialize and update the Undergraduate Historical File was begun two years ago and should be completed within six months. In the meantime, useful although rough comparisons can be made using cross-sectional data.

Information on student perceptions and behaviors at Boston College was gathered in two surveys - the 1978 Admissions Research Questionnaire (N=2610) and the 1978 Registrar's Retention Questionnaire (N=211).[3] Using ratings of 11 attributes that appear on both questionnaires, it is possible to model (using factor analysis) the images held of Boston College by the following four subgroups:

Admissions Phase	Retention Phase
1. matriculants	1. persisters
2. non-matriculants	2. withdrawals

For a discussion of the rationale behind using factor analysis to measure image, see Maguire and Lay, 1981.

The college decision and the persistence decision may be modeled by using the 11 ratings to discriminate among the subgroups described for each phase above. See Maguire and Lay, 1981 for a discussion of the decision-making process and of the use of discriminant analysis to model that cognitive formation.

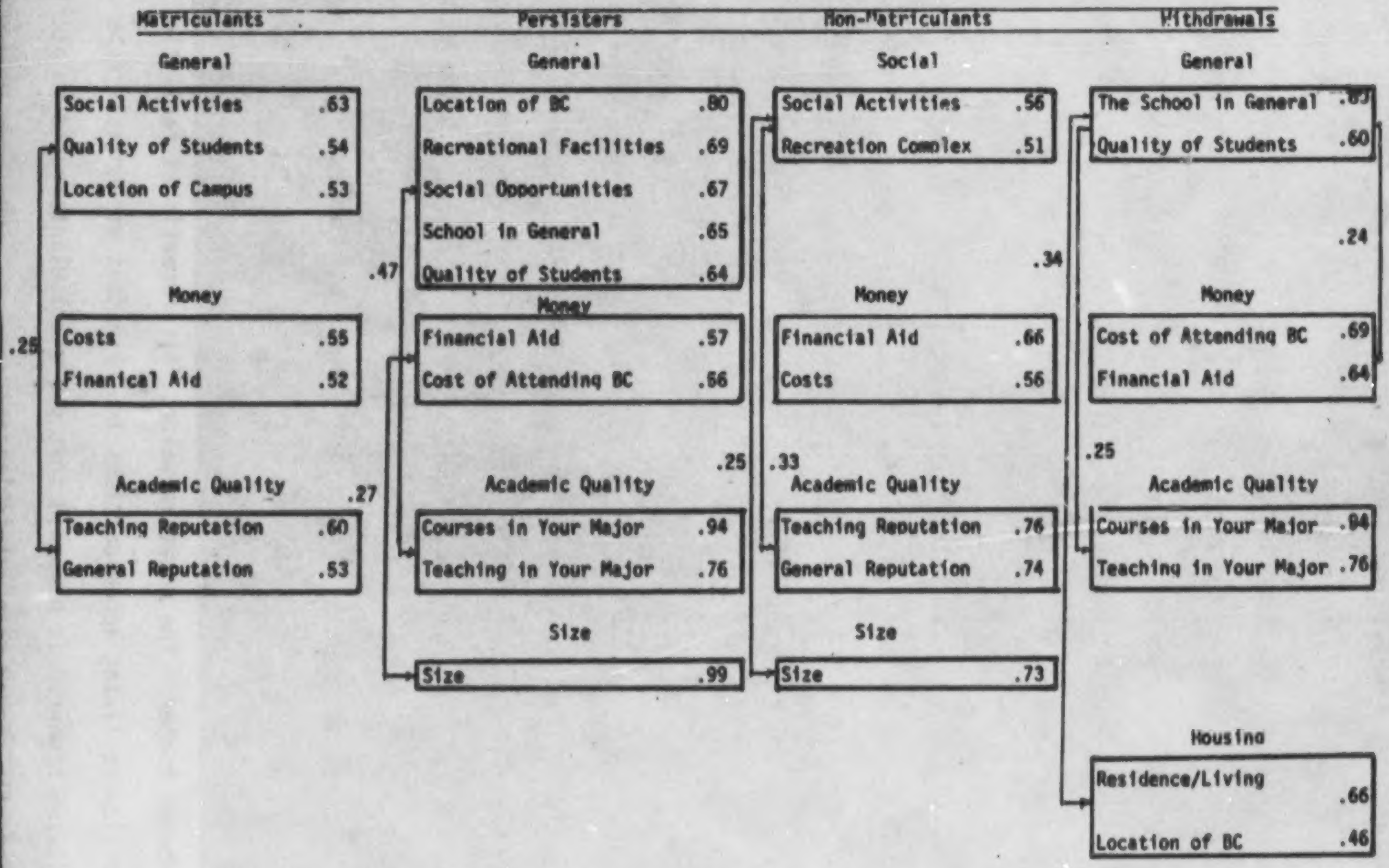
Findings

The Image Model:

Table 1 presents the results of an iterative principle factor analysis with oblique rotations. Factors account for one eigenvalue or greater. Attributes which load (from the structure matrix) $|.4|$ or greater are listed. Only factor intercorrelations of $|.25|$ or higher are reported (on double-pointed arrows).

The major finding is that matriculants and persisters display views of Boston College that are, on the general dimension, much richer than those of non-matriculants and withdrawals. Specifically, matriculants and persisters are more likely to relate social activities and opportunities with other aspects of the University. This is consistent with other studies that have found that level of integration into the college's social environment explains the drop-out decision to some degree. On the money and academic quality dimensions, all four subgroups share remarkably similar images of Boston College. Withdrawals, possibly because they are disproportionately commuter, associate their residence and living accommoda-

Table 1: Factor Analysis Results



Matriculants	General	Social Activities	.63
		Quality of Students	.54
		Location of Campus	.53
	Money	Costs	.55
		Finanical Aid	.52
	Academic Quality	Teaching Reputation	.60
		General Reputation	.53
Persisters	General	Location of BC	.80
		Recreational Facilities	.69
		Social Opportunities	.67
		School in General	.65
		Quality of Students	.64
	Money	Financial Aid	.57
		Cost of Attending BC	.56
	Academic Quality	Courses in Your Major	.94
		Teaching in Your Major	.76
	Size	Size	.99
Non-Matriculants	Social	Social Activities	.56
		Recreation Complex	.51
	Money	Financial Aid	.66
		Costs	.56
	Academic Quality	Teaching Reputation	.76
		General Reputation	.74
	Size	Size	.73
Withdrawals	General	The School in General	.83
		Quality of Students	.60
	Money	Cost of Attending BC	.69
		Financial Aid	.64
	Academic Quality	Courses in Your Major	.94
		Teaching in Your Major	.76
	Housing	Residence/Living	.66
		Location of BC	.46

Note: From 1978 Admissions Questionnaire and 1978 Retention Questionnaire tions with Boston College's location. Interestingly, size is a separate dimension for persisters, but not for matriculants. Presumably, students who accept the offer of Admission do not consider size as important as non-matriculants (who view it as a separate dimension and rate it low). Persisters associate size with cost (both of which they rate low) while non-matriculants associate size with social activities (both rated low). Apparently, to rate both size and costs low is an acceptable pattern, but to rate size and social activities low is not.

The Decision Model:

The coefficients from two separately estimated discriminant functions are presented in Table 2. As can be seen by comparing the canonical correlations for each function, the Admissions decision is more predictable (R=.47) than the Retention decision (R=.34). Both functions, however, yield useful and significant results.

There are some interesting differences between the two decision processes. The size of Boston College, the social and recreational opportunities, the variety of courses and the school's general reputation are of greater importance in the decision to persist than in the decision to matriculate. Financial aid is actually of lesser importance in the persistence decision.

To better understand what this may mean, see Table 3. There, attributes that weight |.3| or higher are reported and ranked. The positive values indicate that matriculants and persisters rate the associated attributes higher. The negative values for recreational facilities and for residence/living accommodations indicate that withdrawals rate these attributes higher. It happened that non-matriculants rated no attribute consistently higher than matriculants.

Table 2: Discriminant Functions

Admissions Questionnaire		Retention Questionnaire	
BC Attribute	D	D	BC Attribute
Financial Aid	.50	.22	Financial Aid Opportunities
Costs	(-).01	(-).08	Cost of Attending BC
Size of School	.38	.54	Enrollment Size of BC
Social Activities	.14	.54	Social Opportunities
Recreation Complex	.06	(-).77	Recreational Facilities
Location of Campus	.31	(-).04	Location of BC
Housing Opportunities	(-).06	(-).51	Residence/Living Accommodations
Variety of Courses	(-).07	.25	Courses in Your Major
Teaching Reputation	.16	(-).15	Teaching in Your Major
Quality of Students	.12	(-).07	Quality of Students
General Reputation	.23	.61	The School in General

Canonical Correlation = .47

Group Centroids:

Non-matriculants = (-).56
Matriculants = .50

Canonical Correlation = .34

Group Centroids

Withdrawals = (-).39
Persisters = .33

Table 3: Non-Trivial Discriminating Attributes

Admissions Questionnaire			Retention Questionnaire
Matriculants	**D**	**D**	**Persisters**
Financial Aid	.50	.61	The School in General
Size of School	.38	.54	Size of School
Location of Campus	.31	.54	Social Opportunities
Non-matriculants			**Withdrawals**
(none of these attributes load significantly)		(-).77	Recreational Facilities
		(-).51	Residence/Living Accomodations

These findings are consistent with an interpretation suggested by the student flow approach. Financial aid is more important in the college choice decision, because those who chose to attend other schools selected themselves out. Self-selection probably also accounts for the drop in the importance of location of campus. As we discovered in the analysis of image, for these subgroups the meaning of "size" is different before and after matriculation. But it is useful to know that this attribute is important in both phases.

Yet these findings seem to be consistent with the Tinto approach. Withdrawals rate much lower than do persisters, the school in general (indicating perhaps an overall lack of integration) and social opportunities (indicating lack of social integration).

That withdrawals rate recreational facilities and residence/living accommodations higher than persisters (controlling for the other variables), however, is not so easily explained. This finding raises the question of why withdrawals are relatively satisfied with some aspects of the University and not with others.

Conclusions and Implications

Hackman and Dysinger (1970) have suggested that the rate of attrition at an institution may be partially explained by the degree of "congruence of needs and goals of the student with the demands and resources of the college environment" (p. 322). And, consistent with a student flow approach, Douvan and Kaye (1964) argue that withdrawal rates may be explained by flaws in the way students choose a college to attend.

We conclude that it may be profitable to view both how a student initially selects a college and later decides to persist or withdraw as part of a more general cognitive process. Are withdrawals not continuing a college choice process that usually began some years earlier and which will continue to the end of their college-going careers? Then too, might it be that perceptions and expectations about a school condition the degree to which students are able to integrate themselves into a college's social environment? The way colleges are initially chosen is certainly far from perfect and students must often find themselves mismatched with colleges. The practical benefit of the student flow approach may be to suggest ways to improve the match between a student and a college.

Reference Notes

[1] For example, the National Center for Higher Education Management systems (1979) has developed a series of student outcomes questionnaires to take cross-sectional measurements of student attitudes at six points: at entry, while attending, after withdrawal, at graduation, three months to one year after graduation, and three to five years after graduation.

[2] Tinto's perspective encompasses most of the ideas we present here, although Tinto puts greater emphasis on integration variables. He argues that student's prior goal and institutional commitments affect, through academic and integration variables, later goal and institutional commitments, which in turn leads to dropping-out or persisting.

[3] See Lay and Maguire (1980) for a discussion of the Admissions study and Lonabocker, Maguire and Lay (1979) for a discussion of the retention study.

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ENROLLMENT PLANNING FOR THE DECADE AHEAD: AN INSTITUTIONAL METHODOLOGY

Edward L. Delaney, Jr.
Director of Institutional Research
Kean College of New Jersey

There is considerable controversy regarding the impact of the anticipated decline in the size of the traditional college-age population during the decade ahead. On the one side, there are the pessimists who have argued that the combination of a smaller high school graduating cohort and reduced employment prospects for college graduates will cause enrollments to decline by as much as 35 to 50 percent, (Crossland, 1980). There are others who view the recent increased participation of women, minorities and older persons as cause for forecasting a steady-state or even modest growth in college enrollments (Carneigie Council, 1980, ACE, 1980). Nonetheless, the final outcome may be most dependent upon the planning and policy-decisions which institutions themselves can initiate and implement as they enter the eighties (Francis, 1980).

Because there is general agreement that one of the most endangered species are public state colleges, there is presently considerable emphasis on long-range institutional planning among New Jersey's state colleges. As is typical, several of these colleges have begun to project the outcomes on the institution of changing external influences upon existing institutional policies and conditions, and then to test the impact of various alternative approaches.

The purpose of this paper is to describe a long-range enrollment projection methodology by which a multipurpose state college has both generated a baseline series of projected enrollments through the next ten years and has also examined the impact of various policy variables on the baseline series.

Procedures

As part of a statewide planning effort, the New Jersey Department of Higher Education provided the State's colleges and universities with an enrollment projection software package, the Statewide Planning System (Bassett et al., 1977), developed by the National Center for Higher Education Management Systems (NCHEMS). The model used for full-time student projections is essentially a cohort survival approach based on population variations and projected shifts among the State's twenty-one counties as well as high school graduation and college-going rates. (For a detailed description of the model see A. Katz and A. Ergin (1979)). The part-time and graduate student enrollments were also able to be generated from the institution's share of the projected population pool in each of the counties from which it has tended to draw its students.

Kean College of New Jersey (KCNJ), a large multipurpose state college, used the NCHEMS software package to first project a baseline series for full and part-time undergraduate and graduate students through 1990. Once the baseline series were completed, projected and high goal series were subsequently made based on certain planning assumptions over which it was thought the college could direct its efforts and resources.

Full-Time Undergraduate Projections

The full-time model is described in Figure 1. It begins by projecting the high school graduates for each county for each year through 1995. It then applies a "College-Going Rate" (the total New Jersey freshmen from the county divided by the total public high school graduates from the county) to the projected high school graduates to generate a pool of

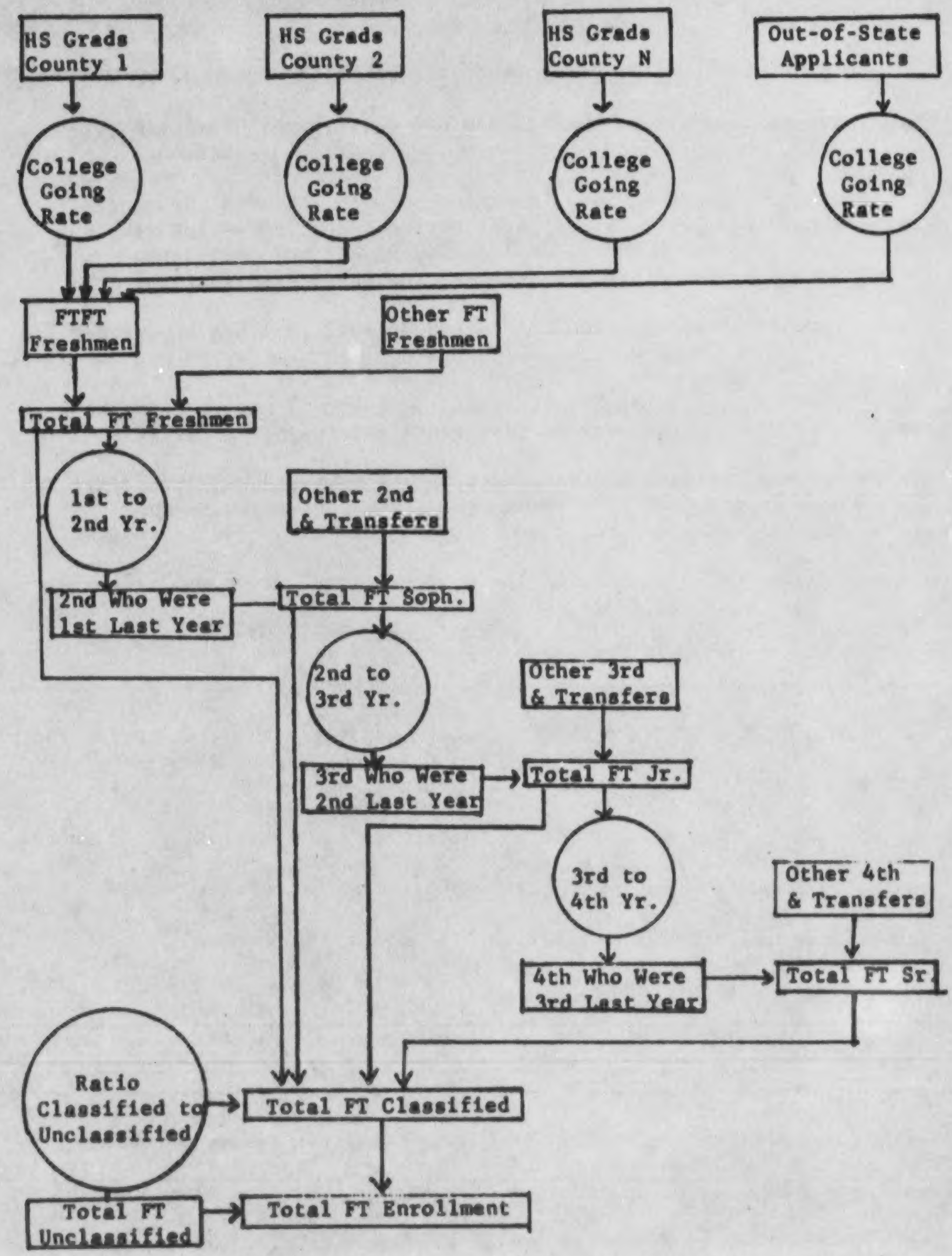
HS Grads County 1
HS Grads County 2
HS Grads County N
Out-of-State Applicants
College Going Rate
College Going Rate
College Going Rate
College Going Rate
FTFT Freshmen
Other FT Freshmen
Total FT Freshmen
1st to 2nd Yr.
Other 2nd & Transfers
2nd Who Were 1st Last Year
Total FT Soph.
2nd to 3rd Yr.
Other 3rd & Transfers
3rd Who Were 2nd Last Year
Total FT Jr.
3rd to 4th Yr.
Other 4th & Transfers
4th Who Were 3rd Last Year
Total FT Sr.
Ratio Classified to Unclassified
Total FT Classified
Total FT Unclassified
Total FT Enrollment

Figure 1. College Full-time Student Projection Model (Flow Diagram)

college-bound students for each county for each year. Projected full-time, first-time (FTFT) Freshmen are generated according to the historical share of students from that county who have enrolled at the College. The number of freshmen coming from each county plus the number coming from out-of-state and those other than first-time freshmen are added to produce the total number of FTFT Freshmen.

The model then generates projected enrollments for each of the remaining three years based upon the retention rates from one year to the next, as well as the transfer rates at each year. The total for the four years plus the number of unclassified students are summed to produce a total full-time undergraduate enrollment.

This model enabled the College to generate three series of enrollments based on various planning assumptions about changes in college-going rates of high school graduates, and the College's retention rates at each class level, as well as increasing percentages of out-of-state and foreign students and those transferring to the College from neighboring community colleges. These projections are presented in Figure 2. The way in which each of the planning assumptions was built into the three series of the SPS model is described below.

The baseline and projected series assume a 3% increase in the college-going rate among full-time, first-time Freshmen from each county, achieved at a 1% increase each year for Academic Year '81, '82 and '83. This reflected a prediction made by the State that the college-going rate of high school graduates is likely to increase from 62% to 65%. The College's goal series assume an additional 3% increase by continuing the 1% annual increase for AY '84, '85, and '86. This seemed possible because KCNJ has a growing number of women, urban, and minority students whose college-going rates are

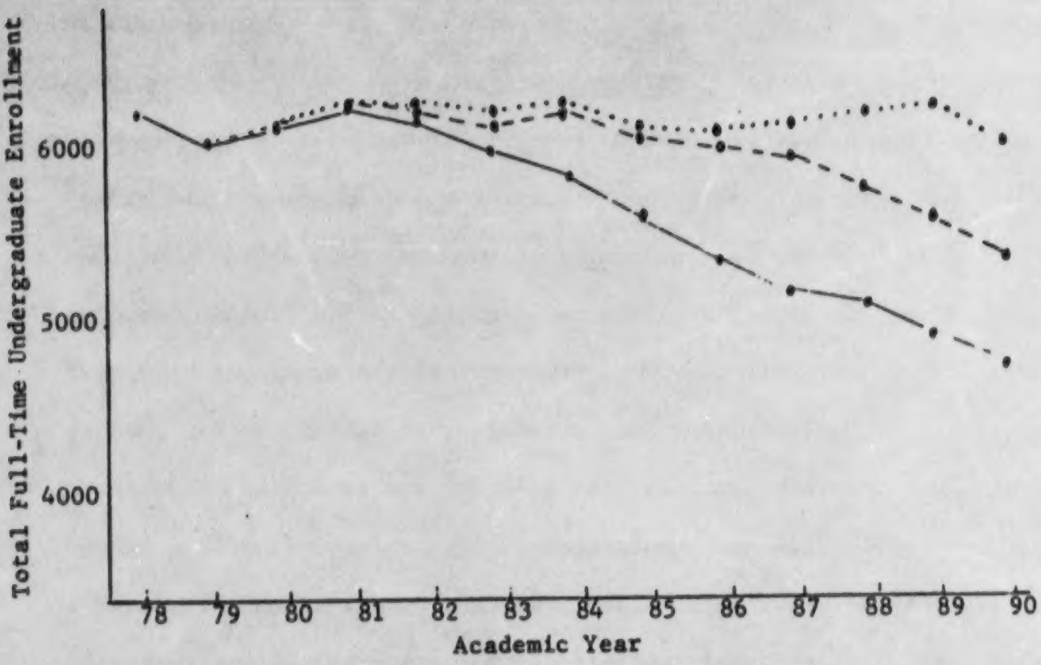

Figure 2. Projected Full-time Undergraduate Enrollments Generated by NCHEMS SPS Model.

expected to increase as educational and social barriers are removed and career aspirations are raised.

In recent years the institution has made some progress in reducing attrition among its entering freshmen. Thus, the projected series assumed that these efforts will produce a 1% annual increase in retention rates among freshmen for AY '81, '82 and '83 and will continue an additional 1% for the same cohort of students as sophomores in AY '82 and '83 and juniors in AY '83. The high goal series optimistically assumed that this trend will continue to increase 1% annually for all three continuing cohorts in AY '84, '85 and '86. The basic skills program and a special freshmen course, as well as improved advisement and counseling, were expected to increase retention of an additional 266 students by AY '85 and 349 by AY '90.

In 1978, 8% of the entering full-time Kean freshmen were from out-of-state and foreign countries. The goal set by the State for the state colleges is to have this group of students comprise 5% of the freshmen class. Since the College had already surpassed this goal in recent years, it was assumed that the existing social network among students from out-of-state and foreign countries will continue to attract this group of students whose actual numbers are expected to decline at a slower rate than in-state full-time students.

Although the baseline series maintained the present rate of transfer students, the projected series assumed a modest 5% increase for AY '85, and the high goal series assumed an estimated 10% increase for AY '90, achieved by a 1% increase for each year. Most of these students are expected to come from neighboring community colleges as the College develops additional upper division programs in the applied disciplines.

Part-Time Undergraduate Projections

Because part-time students are a more heterogeneous group with a greater range in age and program demands than full-time students, a flow model could not be used to make valid projections. Part-time enrollments tend to be more sensitive to changes in social and economic conditions, and institutions have capacity-points beyond which expansion of a certain number of part-time students is not feasible or cost-effective.

Therefore, a less complex model was developed to project part-time projections. Figure 3 illustrates the use of college-going rates of part-time students referenced to a population base in each county. The part-time college-going rate was defined as the ratio of county residents enrolled as part-time students in the College to the total county population.

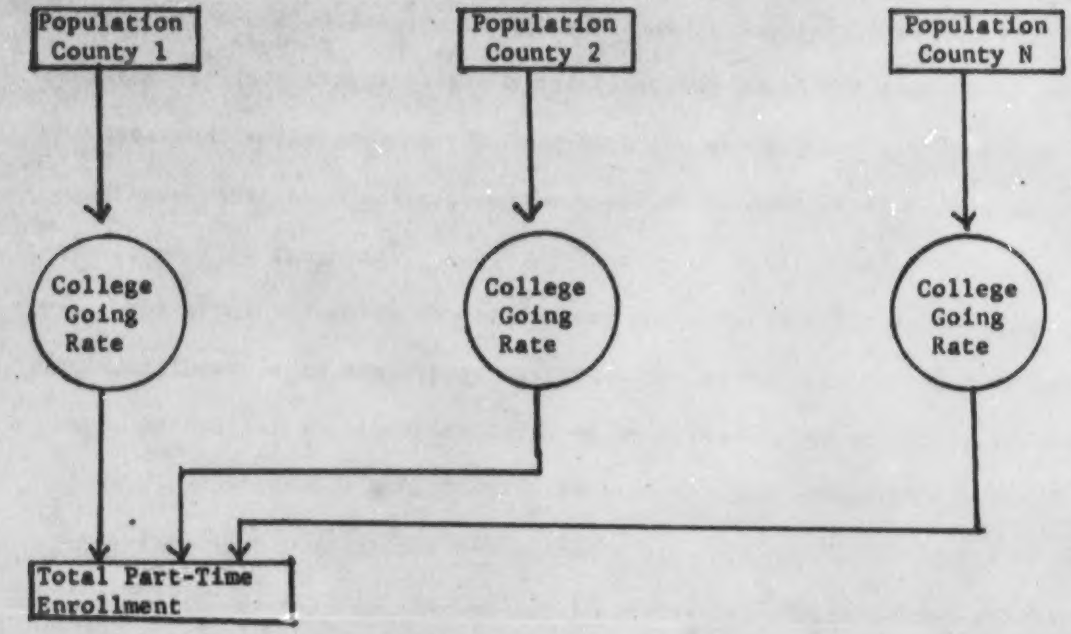
Population County 1
Population County 2
Population County N
College Going Rate
College Going Rate
College Going Rate
Total Part-Time Enrollment

Figure 3. College Part-Time Student Projections (Flow Diagram)

Similar to the full-time series, baseline, projected and goal series were projected for part-time enrollment and are presented in Figure 4. With projected population shifts provided by the State, the baseline series was generated by using the ratio of Fall 1979 part-time undergraduates to the projected population pool in each county, assuming no other change in the participation rate for each county. This procedure yielded a 2% increase in the number of part-time students by 1990 which was simply a function of the projected county population shifts, assuming continuation of the College's current college-going rates among part-time students from each county.

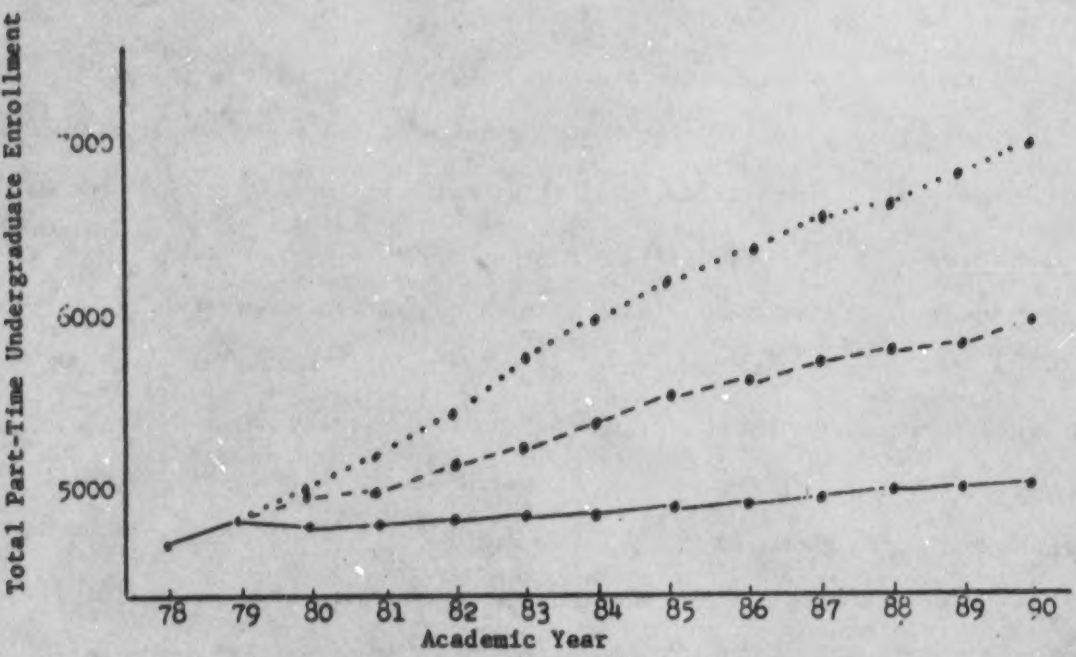

Figure 4. Projected Part-Time Undergraduate Enrollments Generated by NCHEMS SPS Model

The State had projected a 16% increase and a 39% goal in part-time undergraduate headcount by 1990 for the state colleges. KCNJ has traditionally had a greater number of part-time students than the other state colleges and this trend has been increasing by 3 to 7% annually since 1976.

Thus, the projected series presumed a continuous growth rate of 2% per year through 1985-86 and 1% thereafter to 1990-91, which yielded a 21.9% increase over the 1979-80 enrollment. The high goal series was also projected assuming a continuous 4% increase per year through 1985-86 and 2% thereafter to 1990-91. This yielded a 42.7% increase over the 1979-80 part-time enrollment, which may not be realistic unless additional resources were to be provided to the College by the State.

Total Enrollment Projections

The College has a graduate division composed of primarily part-time students enrolled in mostly teacher-education master degree and certification programs. The part-time projection model was also used to project a single graduate enrollment series which assumed a "steady-state" in college-going rates while taking into account projected shifts in county populations. This procedure yielded a 4.4% increase in the number of graduate students by 1990, primarily due to projected population increases in neighboring counties from which the College has traditionally drawn substantial numbers.

The three series for full and part-time undergraduates and the single series for graduate enrollment were combined to provide total headcount baseline, projected and high goal series. These data indicated that the College is likely to increase its total headcount enrollment between 3.7% and 16.5% by 1990, primarily because of the anticipated growth in part-time undergraduates.

Of the three series generated, the intermediate goals series was adopted by campus planning and governance groups as the projections on which the college would develop its institutional plan for the decade ahead, although the baseline and high goal series served as the parameters of actual enrollments. The intermediate series indicated the likelihood of stable headcount and FTE enrollment through 1985-86 and a slight decline thereafter. However, this outcome assumed a modest increase in retention among freshmen and a continued growth in part-time undergraduate enrollment to off-set full-time student declines.

Discussion

The enrollment projection methodology described above has attempted to demonstrate how future enrollments through the decade ahead will be derived from present conditions (i.e., baseline series) and several planned interventions (i.e., projected and high goal series). However, there may be some danger that the numeric series generated by the methodology can ascribe an illusion of causal certainty between the "hard" numbers and the "actions to be taken" among some campus groups.

While the model utilized for full-time students accounted for the anticipated decline in high school graduation and college-going rates, the model is not responsive to the numerous factors which influence these rates, i.e., regional economic growth, emergent manpower requirements, unemployment, college costs, transportation and government regulation (energy availability, military draft, etc.). Many of these economic factors have been found difficult to project beyond a year or two, much less ten to fifteen years.

In short, although the methodology is somewhat responsive to regional demographic shifts and cohort-survival trends, the projections are only as valid as the assumptions on which they were generated. The rapidly changing shifts in county population and economic conditions would seem to require development of a more responsive model which would recognize at least the variety of differentiated population segments and their unique patterns of college aspiration and participation.

Nonetheless, the present methodology has provided a useful tool for institutional long-range planning. Further refinement will be possible with up-dated demographic data from the 1980 Census and validation of projected -vs- actual enrollments in the years ahead.

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DESIGN AND IMPLEMENTATION OF A STUDENT ENVIRONMENTAL ASSESSMENT MODEL FOR APPLICATION IN INSTITUTIONAL DECISIONMAKING

James L. Mahon
Assistant Dean of
Student Affairs
Bentley College

Thomas H. Zarle
Vice President and Dean
of Student Affairs
Bentley College

Beverly A. Joyce
Research Associate
Boston College

During its three hundred years of existence, American Higher Education has been quite consistent in maintaining a commitment to the development of sound educational programs and the stimulation of intellectual achievement. These worthy purposes appear to have encountered formidable obstacles. Research by scholars, most notably Astin (1977), indicates that major policy decisions on the campus are "now more often than not dictated by political and economic concerns, not educational ones." An examination of the factors which Astin maintains have caused this "perilous course", coupled with Mayhew's (1970) findings on the nature of the campus in the late 1960's, suggest a need for institutions of higher education to become much more aware of the values, attitudes and complexities which exist on each campus. Feldman, Newcomb (1969) and Pace (1979) indicate the need to become more cognizant of the impact of college on students.

To contend effectively with increasing external pressures, it seems imperative that institutions of higher education plan for their future so that the lessons of the past are united with a firm understanding of the present condition, both on the campus and with society in general. Shtogren (1978) recommends that any institution desirous of such an enlightened self-awareness must closely examine itself. This "organizational development", as it is viewed by Bergquist and Phillips (1975), requires examination of such issues as decisionmaking, intergroup relations, dealing with conflicts, power and authority, group processes, and managerial styles. Bennis (1966) maintains that the college or university must utilize a behavioral science approach in solving its problems. Pace and Stern (1958) theorize that it is important to determine how individuals perceive their environment, because the environment shapes behavior by facilitating or inhibiting initiative. Moos (1974) expands on this theory and suggests the need to develop a social ecological approach that promotes maximum human functioning in the environment.

This project is predicated upon the theoretical approach of Pace and Stern (1958) and Moos (1974) and the operational guidelines of Sikes (1978) to design and implement a system on the campus that will gather data from a sample of students regarding their levels of satisfaction, reasons for such satisfaction or dissatisfaction, and any recommendations for solution of perceived problems involving their college. These data will then be organized into a reportable form and shared with appropriate college personnel for use in decisionmaking and problem solving. An objective of such an assessment model will be that of offsetting what Coyne (1977) refers to as a current system of operation where many important institutional decisions are made without the desired or even necessary degree of "hard" and reliable information.

More specifically, this project was undertaken to:

(1) develop an environmental assessment technique, which will gather data relevant to the campus environment. The campus environment will be conceptualized into four major domains: physical, academic, administrative and social;
(2) implement this model at a four year private institution in Massachusetts;
(3) analyze, categorize and present these data in a valid format usable as a resource in the institutional decisionmaking process; and
(4) document the application of these data and their impact on specific institutional decisions at a four year private institution in Massachusetts.

Description of Instrument Content

Based on research conducted by the Western Interstate Commission for Higher Education (WICHE) (1973), and the ER form developed by Kaiser, Banning and Aulepp (1975), a self-made instrument was designed for the following purposes:

(1) to attempt to ascertain student perceptions of the nature of the campus environment at the College,
(2) to obtain student descriptions of occurrences in the environment that have produced their perceptions of it (environmental referent),
(3) to obtain student recommendations concerning aspects of the environment that should be changed or maintained at the College.

Using the Environmental Assessment Inventory (EAI) at Illinois State University, Coyne and Lamb (1978) sought to determine student perceptions of their campus environment. The EAI divides the campus "milieu" or environment into four categories; social environment, physical environment, academic environment, and administrative environment. This instrument contains thirty-four environmental conditions that affect campus life. The arrangment of the environment into the four categories provides an effective method for analyzing and reporting data. Drawing from the EAI, the model in this study utilizes the academic, administrative, social and physical categories in its design.

The next step in the instrument design was to develop a wide range of statements about conditions that affected the campus environment. A list of over seventy statements was compiled utilizing articles from the student newspaper and suggestions from faculty, students, and staff at the College. Through a four week process involving input from many members of the College community, a listing of forty statements emerged. These statements were administered in a pilot situation to a randomly selected group of students prior to the fall semester, 1979. Through the response from these students, seven statements were deleted, eight were modified and one was added. Three of the statements were to be administered only to resident students, while two of the statements were to be administered only to commuter students. In an effort to minimize response bias, eleven of the statements were phrased in a negative manner. The "new" thirty-four statements were again piloted and received positive responses as to their face validity and applicability to the College.

The final version of the instrument was structured so as to obtain information from four demographic items concerned with:

(1) the sex of the respondent
(2) commuter/resident status of the respondent
(3) academic major of the respondent
(4) class code of the respondent

The remaining thirty-four statements were each categorized under one of four environmental headings.

Academic Environment

- My instructors are personally interested in how I am getting along.
- When I need advice, I consult my faculty advisor.
- Standards set by my instructor are not particularly hard to achieve.
- Most of my instructors are very thorough and well-versed in their field.
- I am satisfied with the way my instructors conduct class.
- My courses are adequately preparing me for my preferred career.
- Courses seem to be primarily directed only to students preparing for a career in that field.
- The academic atmosphere at the College is very competitive.
- The size of my classes strongly influences my interest and involvement.
- Incidents of cheating, plagiarism, and other forms of academic dishonesty occur often at this College.

Administrative Environment

- The Office of Residence Life is responsive to my needs.
- I have ample opportunity to participate in college decision-making that affects me.
- Rules and regulations are clearly spelled out.
- Administrative procedures, such as registration, course schedules, etc., are cumbersome.
- College food services are adequate.

Physical Environment

- I feel pretty safe on campus.
- Students have little respect for College property.
- There is sufficient recreational/athletic space and facilities at the College.
- I take pride in the appearance of the campus.

Social Environment

- The College social program (concerts, mixers, films, plays....) meets my needs.
- There is a need for the College to provide a greater opportunity for me to increase my appreciation and awareness of art, music, literature, and other cultural expressions.
- There is a need for the College to increase the number of ethnic and racial minorities.
- I take advantage of the opportunities offered by the Greater Boston Area.
- There is widespread alcohol abuse on campus.
- There is widespread drug abuse on campus.
- The Student Government Association effectively represents my point of view.
- Living in the residence halls has been a valuable part of my College experience.
- When a problem arises the students on my floor seldom attempt to resolve the problem without the aid of a resident assistant.
- Being a commuter student is preferable to living on campus
- Student life at the College is geared towards the resident student.
- To me, the College is a friendly place.
- Students here are given the respect and responsibility of adults.

Two open-ended statements were included at the end of the instrument:

- What major experiences have affected you in a positive way?
- What major experiences have affected you in a negative way?

Instrument Format

The final design of the instrument incorporated a seven point Likert Scale response to each statement about the College environment. It was also deemed essential that development of the form allow respondents to provide descriptions of what is happening in the environment that produces their perceptions of it and recommendations to improve the situation. Therefore, after initially responding to each statement using the Likert Scale, the respondent was asked to provide responses to the following questions:

- What things at this College exist or have happened to make you feel this way?
- What would you recommend be changed at this College to improve the situation or what things should remain unchanged?

The final version of the instrument was designed to gather a statistical response using the Likert Scale, an environmental referent, which provided the reasons for the statistical response, and recommendations for improvement or no change.

Description of Sample Population

The participants in this study were fulltime day students at a private four year college in Massachusetts during the fall semester of 1979. A random sample of two hundred students was generated, reflecting a cross-section of the College's 3,500 full-time day students. In an effort to keep the sample intact for the entire academic year, seniors graduating at the conclusion of the fall semester, 1979, were not included. Each of the randomly selected students was sent a letter soliciting their involvement in this project. The letter was sent to each student's home address two weeks prior to the commencement of fall semester. During the first week of classes, the Environmental Researchers coordinating the data gathering efforts were able to contact one hundred eighty four of these students. One hundred and eighty one of those students contacted agreed to participate in the project. These one hundred and eighty one students participated in the first administration of the instrument, which occurred from September 16-22, 1979.

Research Data

A premise of this study was that the frequent administration of the instrument described would provide constant and current information, repeatedly updated throughout the academic year. It was hoped that repeated administration of the instrument would provide data on which to base comparisons, contrasts, and an analysis of trends for use in planning. The instrument was administered upon three occasions during the fall semester, 1979 by ten students especially selected for this purpose. These students were identified as Environmental Researchers (ER's). Their selection was based on recommendations as to interpersonal skills, initiative, and dependability received from members of the College faculty and staff. The first ten students selected for the ER positions were contacted by phone during the summer and given the details of the program. All of the students accepted the offer to become ER's and were sent a letter confirming their involvement and notifying them of the first training session. At the initial training session, devoted to review of Environmental Research and interviewing skills, each ER was randomly assigned twenty students from the sample of two hundred. Additional training sessions occurred every two weeks during which continuous attention was devoted to minimizing ER bias, subjectivity and interpretation in the recording of responses. During the week prior to each assessment, the ER was instructed to set up separate 30-45 minute interview times with each participant. Each ER interviewed the same group of students for each assessment. These interviews were to be scheduled in as relaxed and comfortable settings as possible usually in the residence halls or Student Center. The interview consisted of the ER reading the statement and recording all responses made by the participant.

Response Distributions by Percentage for Each Statement

Responses to each of the thirty-four statements in the study were tabulated by percentage and summarized for each of the three assessment periods. Table 1 provides an example of the format by which responses to each statement in the study were presented to various constituencies of the College. Responses are presented in a format that includes percentage tabulation of Likert Scale responses, summary of these data, summary of respondent reasons for satisfaction or dissatisfaction and summary of respondent recommendations for ways in which to improve areas in which dissatisfaction was expressed. Responses to each statement were also presented to these constituencies as the study was progressing. It was the intent of such a format to provide a style that allowed for a clear and concise examination and analysis of data by statement for each of the three assessment periods. The commentary provided for each statement provides an illustration of the diversity of factors that stimulated the Likert Scale responses. Similarly, the summary of respondent recommendations provides a representative student perspective for improving areas of expressed concern. These recommendations also serve to reinforce current administrative policy and procedures in areas positively perceived by the respondents.

Conclusions

The findings of this study support the concept that an environmental assessment program can be a useful resource in gathering student perceptions about the campus environment for use in institutional decisionmaking. Data derived from this study were useful in identifying areas where students were satisfied and dissatisfied. The overall positive responses to the statements, "My instructors are personally interested in how I am getting along, Most of my instructors are very thorough and well-versed in their field, and I am satisfied with the way my instructors conduct class", indicate a strong student

TABLE 1
Response Distribution by Percentage for Statement #31

31. Incidents of cheating, plagiarism, and other forms of academic dishonesty occur often at the College.

		Assessment 1 Sept. 16-22	Assessment 2 Oct. 14-20	Assessment 3 Dec. 2-8
1. Strongly Disagree	(1)	16	22.9	14.3
2. Definitely Disagree	(2)	22.1	23.5	22.9
3. Slightly Disagree	(3)	15.5	20.6	25.7
Total Disagree (%)		53.6	67.0	62.9
4. Slightly Agree	(4)	16	14.1	19.3
5. Definitely Agree	(5)	3.9	7.1	9.3
6. Strongly Agree	(6)	2.8	5.3	3.6
Total Agree (%)		22.7	26.5	32.2
7. N/A	(7)	23.8	6.5	5.0
Median Response		3.268	2.671	3.000
Sample Size, N		181	170	160

Summary of Data

After three assessments, noticable changes shown from these data are: a change in the Non-applicable from 23.8 in Assessment I to 6.5 in Assessment II. This occurrence most probably reflects that Assessment I ranged from September 16 through the 22nd. Few, if any, tests were taken and term paper assignments were just being distributed. Also, the survey includes new transfers and freshmen and at this point they had taken few, if any, exams.

The responses from each assessment indicate larger percentage in some form of disagreement with the statement of frequent academic dishonesty. The percentage of overall agreement with the statement increased with each assessment while disagreement with the statement decreased from 67% in Assessment II to 62.9% in Assessment III. This may indicate a need to monitor student perceptions closely early next semester for changes relating to completion of fall semester final exams.

Summary of Reasons from Respondents

Responses during Assessment I corresponded to the beginning of the semester at which time few exams had been given. Students perceived some incidents of academic dishonesty in reporting during Assessment II, but generally indicated that it occurred in individual, isolated cases. Some respondents indicated that certain classrooms in Lindsay Hall contributed to the problem by the closeness in seating. Many respondents stated that the essay and long problem-solving nature of many exams made the copying of another's work very difficult. The most frequent complaint was with professors who gave the identical exam to all of their class sections.

Summary of Recommendations from Respondents

The most frequent recommendations throughout all three assessments were:

1. A clearly defined academic honesty system with strong sanctions.
2. More effective proctoring of exams in certain classes.
3. Professors should make different exams for separate sections.
4. Professors should regularly change exams because of "old exam files".
5. Term paper topics and explicit references should change periodically.

endorsement of College faculty.

Through the environmental assessment program data gathered from the three assessments were used in several instances as a tool in decisions made at the College. One of the most valuable contributions of the study involved data generated by the statement, "Administrative procedures, such as registration, course scheduling, etc. are cumbersome." The high percentage of respondents in agreement with this statement indicated a widespread concern with certain administrative procedures. The respondents' reasons for such concern primarily involved the registration and course scheduling process. Many respondents recommended centralizing the procedure in a large facility such as the athletic center. These data assisted the College in making a decision to reorganize in such a manner as to centralize management responsibility for the entire registration and course scheduling process and move towards a centralized "one-stop-shopping" registration system. Responses to the statement "Incidents of cheating, plagiarism, and other forms of academic dishonesty occur often at the College", provided the Academic Honor System Committee with useful data as they engaged in their deliberations on the design of a new campus-wide honor system. One of the statements developed for commuter students in the sample was, "Being a commuter student is preferable to living on campus." The responses from all three assessments to this statement indicated strong support by these commuters for additional construction of on-campus housing. This response was somewhat surprising to many at the College, because the previous spring had witnessed frequent student expressions of displeasure concerning construction of an on-campus residence hall. These data raised questions as to the representation of the commuter student viewpoint by such student organizations as the Student Government Assocition and Student Affairs Board.

		STATEMENT	S D S S D S N t e l l e t / r.f.t. t.f.r. A D D D A A A	WHAT THINGS AT BENTLEY EXIST OR HAVE HAPPENED TO MAKE YOU FEEL THIS WAY?	WHAT WOULD YOU RECOMMEND BE CHANGED AT BENTLEY TO IMPROVE THE SITUATION OR WHAT THINGS SHOULD REMAIN UNCHANGED.
				PLEASE BE AS SPECIFIC AS POSSIBLE	PLEASE BE AS SPECIFIC AS POSSIBLE
1.	1 / 2	M / F			
2.	1 / 2	Comm/Res			
3.	___	Major			
4.	___	Class Code			
5.		The College social program (concerts, mixers, films, plays...) meets my needs.	1 2 3 4 5 6 7		
6.		There is a need for Bentley to provide a greater opportunity for me to increase my appreciation and awareness of art, music, literature, and other cultural expressions.	1 2 3 4 5 6 7		
7.		There is a need for Bentley to increase the number of ethnic and racial minorities.	1 2 3 4 5 6 7		
8.		I take advantage of the opportunities offered by the Greater Boston Area.	1 2 3 4 5 6 7		
9.		There is widespread alcohol abuse on campus.	1 2 3 4 5 6 7		
10.		There is widespread drug abuse on campus.	1 2 3 4 5 6 7		
11.		The Student Government Association effectively represents my point of view.	1 2 3 4 5 6 7		
12.		I feel pretty safe on campus.	1 2 3 4 5 6 7		

The following general conclusions can be made as a result of these and other findings:

> The frequent administration of a survey instrument in a structured interview format can provide constant and current information, repeatedly updated throughout the academic year.
>
> The categorization of environmental factors such as the academic, administrative, physical, and social environments, can when mapped over time, provide useful data in analyzing trends, comparisons, and contrasts for use in planning.
>
> Instances can be documented where data generated from student perceptions of the environment have proved to be a useful resource in institutional decisionmaking.

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ADULT POPULATION POOLS, ADULT PARTICIPATION RATES AND PROJECTED ADULT CREDIT - ENROLLMENT AT COLLEGES AND UNIVERSITIES IN NEW YORK STATE

Eric Braun
Education Aide
New York State Education Department
Bureau of Postsecondary Planning

Introduction

This paper was prepared as a background supporting document for the 1980 Regents Statewide Plan for the Development of Postsecondary Education. It is part of a larger work examining adult participation in postsecondary education.

The purpose of this report is to assist colleges and universities in understanding the adult market for postsecondary education. It examines and projects the pool of adults eligible to enroll in postsecondary education in New York State to determine whether it is reasonable to believe that adult participation can offset undergraduate enrollment declines in the 1980's.

Adult Population Pools for Undergraduate and Graduate Education[1]

The adult population pools for each level of study will be defined as all adults over 25 years old who have the necessary educational requirements to participate for credit at that level. The adult pool for undergraduate education is defined as the population over 25 years old that has attained four years of high school, or four years of high school and between one and three years of college. The adult pool for graduate education is defined as the population over 25 that has attained four or more years of college.

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[1] Information on adult population pools originated from the U.S. Census Current Population Survey for 1970, 1975, and 1979, which took samples nationwide to estimate educational attainment of the population by age group. The New York State subsample of the national survey was used to estimate the educational attainment by age in New York State. The New York State Department of Commerce provided a special computer tabulation for 1970 and 1975 data, 1979 data - obtained from the Bureau of Census publication Educational Attainment in the United States - 3/79 & 3/78.

Both the adult pool for undergraduate education and the adult pool for graduate education are numerically large. In 1979, the adult pool for undergraduate education in New York State consisted of 5,474,000 people, 51.8 percent of the population over 25. The adult pool for graduate education consisted of 1,812,000 people, 17.0 percent of the population over 25 years old (see tables 1 and 2).

The adult pools for undergraduate and graduate education have grown substantially faster than the total population age 25 and over. Between 1970 and 1979, the adult pool for undergraduate education increased by 27.4 percent and the adult pool for graduate education increased by 45.3 percent, while the total population over 25 increased by only 3.6 percent.

Tables 1 and 2 project the adult undergraduate pool and the adult graduate pool to 1985 and 1990. The projected percentages of age group population belonging to each pool were extended from the 1979 data. In order to project the percentages, the 25 and over age group was divided into five smaller age groups: 25 to 34, 35 to 44, 45 to 54, 55 to 64, and 65 and over. The percentage of each of the five age groups belonging to the adult undergraduate pool and the adult graduate pool was determined for 1979. The projected percentage belonging to each pool was then extended from the 1979 data, six years to 1985 and 11 years to 1990, shifting to appropriate older age groups. For example in 1979, 61.1 percent of 25 to 34 year olds were in the adult pool for undergraduate education; six years later, in 1985, the same percentage was projected for the 31 to 40 year olds. The five age groups used to project the percentages were then broadened into three age groups (25 to 44, 45 to 64, and 65 and over) because enrollment information later used for adult participation rates was not available for each of the smaller age groups. The projected adult pool was then obtained for each of the broader age groups by multiplying the projected percentage of each age group belonging to the pool by 1978 Economic Development Board projections of total population for each age group. It should be noted that the Economic Development Board projections were reduced by two percent for 1979 (on the basis of 1980 Census data) and by four percent for 1985 and six percent for 1990 in the interest of conservatism and in light of recent high out-migration levels.

For the purposes of this study, the following assumptions were made: increases in the size of each pool due to the in-migration from other states and increases due to higher levels of educational attainment by State residents is expected to equal decreases in the size of each pool due to out-migration of residents to other states; decreases due to higher levels of educational attainment by State residents, and decreases caused by deaths of residents belonging to the pool.

The approach does not incorporate specific, refined assumptions, concerning the characteristics of adults by age group that will affect the population pools in projected years (migration and increased educational attainment in and out of the population pools, and deaths out of the population pools). The formulation of refined assumptions concerning the characteristics of adults in the different population pools for projected

Table 1

Adult Pool for Undergraduate Education, NYS (Persons With 4 Years of High School and Persons With 4 Years of High School and Between 1-3 Years of College)

Actual (Based on Sample Estimates)

	1970		1975		1979		1970-1975	1975-1979
	Population with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent of Age Group Pop. with 4 Years of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Population with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs of College	Percent of Age Group Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Population with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent of Age Group Pop. with 4 Yrs. of High School or with 4 Years of High School and Between 1-3 Yrs. of College	Percent Change in Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent Change in Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College
Age Groups								
25-44	2,780,000	51.6%	2,631,000	55.8%	2,913,000	59.3%	+ 7.9%	+18.9%
45-64	1,385,000	39.1%	1,967,000	49.8%	1,919,000	53.0%	+22.8%	1.6%
65-over	631,000	22.9%	539,000	24.9%	640,000	31.1%	+23.9%	+19.9%
45-over	2,016,000	33.6%	2,461,000	41.7%	2,559,000	45.7%	+23.1%	+ 3.1%
25-over	4,796,000	41.3%	4,932,000	47.0%	5,474,000	51.8%	+10.8%	+11.0%

Projections

	1985		1990		1979-1985	1985-1990	1979-1990
	Population with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent of Age Group Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Population with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent of Age Group Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent of Age Group Pop. with 4 Yrs. of High School or with 4 Years of High School and Between 1-3 Yrs. of College	Percent Change in Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College	Percent Change in Pop. with 4 Yrs. of High School or with 4 Yrs. of High School and Between 1-3 Yrs. of College
Age Groups							
25-44	3,369,000	61.0%	3,700,000	63.0%	+15.0%	+10.1%	+27.2%
45-64	1,855,000	56.9%	1,831,000	59.0%	- 3.3%	0%	+ .5%
65-over	836,000	40.0%	1,029,000	48.0%	+30.6%	+23.1%	+60.8%
45-over	2,659,000	45.7%	2,831,000	52.3%	+ 3.1%	+ 7.1%	+12.6%
25-over	6,038,000	54.9%	6,590,000	57.8%	+10.7%	+ 8.8%	+20.4%

Source: 1970 and 1975 data from U.S. Department of Census "Current Population Survey, Annual Demographic File, 1970 and 1975" (Special computer tabulation from New York State Department of Commerce). 1979 data from U.S. Department of Census Education Attainment in the United States March 1979 and 1978. General population data from New York State Department of Commerce 1978 Official Population Projections for New York State Counties. Projections for 1985 and 1990 were made from this data.

Table 2

Adult Pool for Graduate Education, NYS (Persons With 4 or More Years of College)

Actual (Based on Sample Estimates)

	1970		1975		1979		1970-1975	1975-1979
	Population with 4 or more Yrs. of College	Percent of age Group Pop. with 4 or more Yrs. of College	Population with 4 or more Yrs. of College	Percent of Age Group Pop. with 4 or more Yrs. of College	Population with 4 or more Yrs. of College	Percent of Age Group Pop. with 4 or more Yrs. of College	Percent Change in Pop. with 4 or more of College	Percent Change in Pop. with 4 or more Yrs. of College
Age Groups								
25-44	726,000	16.6%	1,103,000	20.2%	1,112,000	22.7%	+51.9%	+ .8%
45-64	611,000	10.2%	670,000	12.7%	921,000	15.6%	+16.8%	+ 8.9%
65-over	115,500	5.6%	191,000	9.9%	179,000	8.7%	+73.6%	- 6.3%
45-over	521,000	8.7%	671,000	11.9%	700,000	12.9%	+28.8%	+ 4.3%
25-over	1,247,000	12.0%	1,770,000	16.9%	1,812,000	17.0%	+42.1%	+ 2.1%

Projections

	1985		1990		1979-1985	1985-1990	1979-1990
	Population with 4 or more Yrs. of College	Percent of Age Group Pop. with 4 or more Yrs. of College	Population with 4 or more Yrs. of College	Percent of Age Group Pop. with 4 or more Yrs. of College	Percent Change in Pop. with 4 or more Yrs. of College	Percent Change in Pop. with 4 or more Yrs. of College	Percent Change in Pop. with 4 or more Yrs. of College
Age Groups							
25-44	1,381,000	25.0%	1,590,000	27.6%	+24.2%	+15.1%	+43.0%
45-64	581,000	17.0%	640,000	[illegible]	+11.9%	9.8%	+27.8%
65-over	200,000	10.0%	206,000	11.9%	+16.8%	+17.3%	+37.6%
45-over	792,000	16.3%	886,000	16.1%	+13.1%	+11.9%	+26.6%
25-over	2,173,000	19.7%	2,476,000	21.3%	+19.9%	+13.9%	+36.6%

Source: 1970 and 1975 data from U.S. Department of Census "Current Population Survey, Annual Demographic File, 1970 and 1975" (Special computer tabulation from New York State Department of Commerce). 1979 data from U.S. Department of Census Education Attainment in the United States March 1979 and 1978. General population data from New York State Department of Commerce 1978 Official Population Projections for New York State Counties. Projections for 1985 and 1990 were made from this data.

years should be the subject of further study.

The adult population pools for undergraduate and graduate education are projected to continue to increase at a faster rate than the total population of adults over 25 years old. The adult population pool for undergraduate education is projected to increase by 20.4 percent by 1990. The adult pool for graduate education is projected to increase by 36.6 percent by 1990. The total population of individuals over 25 years old is projected to increase by only 12.3 percent by 1990.

Adult Participation Rates for Undergraduate and Graduate Education

Adult participation rates were determined by dividing adult enrollment for credit by the population pool eligible for that enrollment. In 1979, 3.8 percent of adults in the undergraduate pool participated in undergraduate education, 1.2 percent as full-time undergraduates and 2.6 percent as part-time undergraduates. In 1979, 6.2 percent of adults in the graduate pool participated in graduate education, 1.6 percent as full-time graduate students, and 4.5 percent as part-time graduate students. As can be seen in tables 3 and 4, younger adults participated at consistently higher rates than older adults.

It should be pointed out that the New York State Education Department did not begin to collect enrollment data by age until the fall of 1976, it is impossible to formulate trends in the participation rates of adults in credit courses for periods prior to that year.

Projected Adult Enrollment

The adult enrollment projections developed for this report are based on the projected adult population pools and assumes that participation rates will remain at the 1979 level through 1990. The enrollment projec-

Table 5
Adult Participation in Undergraduate Education
1979 and Projections: 1985 and 1990, NYS
(Assuming Constant Participation Rates from 1979)

Age Groups	1979 Estimated Enrollment (Based on 1979 Enrollment and 1975 Age Distribution data)	1979 Population Pool (Persons with 4 years of high school or persons with 4 yrs. of high school and 1-3 years of college)	1979 Participation Rate (Estimated enrollment divided by Population Pool)	1985 Projected Enrollment	1985 Population Pool (Persons with 4 years of high school or persons with 4 yrs. of high school and 1-3 years of college)	1985 Participation Rate (Assuming Constant Participation rate from 1979)	1990 Projected Enrollment	1990 Population Pool (Persons with 4 years of high school or high school and 1-3 yrs. of college)	1990 Participation Rate (Assuming Constant participation rate from 1979)
	Full-Time Undergraduate			Full-Time Undergraduate			Full-Time Undergraduate		
25-64	60,318	2,915,000	2.1%	69,712	3,369,000	2.1%	76,768	3,709,000	2.1%
65-over	5,382	2,559,000	.2%	5,635	2,689,000	.2%	6,038	2,881,000	.2%
Total 25-over	65,700	5,474,000	1.2%	75,347	6,058,000	1.2%	82,807	6,590,000	1.2%
	Part-Time Undergraduate			Part-Time Undergraduate			Part-Time Undergraduate		
25-64	120,048	2,915,000	4.1%	138,768	3,369,000	4.1%	152,773	3,709,000	4.1%
65-over	21,899	2,559,000	.9%	23,011	2,689,000	.9%	24,655	2,881,000	.9%
Total 25-over	141,947	5,474,000	2.6%	161,779	6,058,000	2.6%	177,428	6,590,000	2.6%
	Total Undergraduate			Total Undergraduate			Total Undergraduate		
25-64	180,366	2,915,000	6.2%	208,480	3,369,000	6.2%	229,520	3,709,000	6.2%
65-over	27,281	2,559,000	1.1%	28,646	2,689,000	1.1%	30,710	2,881,000	1.1%
Total 25-over	207,647	5,474,000	3.8%	237,126	6,058,000	3.8%	260,230	6,590,000	3.8%

Sources: 1979 Enrollment data from NYSED, Higher Education Data System.
1979 Population pool data from U.S. Department of Commerce Educational Attainment in the United States March 1979 and 1978.
Projections were made from this data.

Table 6
Adult Participation in Graduate Education
1979 and Projections: 1985 and 1990, NYS
(Assuming Constant Participation Rates from 1979)

Age Groups	1979 Estimated Enrollment (Based on 1979 Enrollment and 1975 Age Distribution data)	1979 Population Pool (Persons with 4 or more yrs. of college)	1979 Participation Rate (Estimated enrollment divided by Pop. Pool)	1985 Projected Enrollment	1985 Population Pool (Persons with 4 or more yrs. of college)	1985 Participation Rate (Assuming Constant Participation rate from 1979)	1990 Projected Enrollment	1990 Population Pool (Persons with 4 or more yrs. of college)	1990 Participation Rate (Assuming Constant Participation rate from 1979)
	Full-Time Graduate			Full-Time Graduate			Full-Time Graduate		
25-64	28,061	1,112,000	2.5%	34,849	1,381,000	2.5%	40,121	1,590,000	2.5%
65-over	1,522	700,000	.3%	2,061	792,000	.3%	2,306	886,000	.3%
Total 25-over	29,583	1,812,000	1.6%	36,910	2,173,000	1.6%	42,427	2,476,000	1.6%
	Part-Time Graduate			Full-Time Graduate			Full-Time Graduate		
25-64	73,039	1,112,000	6.6%	90,688	1,381,000	6.6%	104,412	1,590,000	6.6%
65-over	8,378	700,000	1.2%	9,705	792,000	1.2%	10,857	886,000	1.2%
Total 25-over	81,417	1,812,000	4.5%	100,393	2,173,000	4.5%	115,269	2,476,000	4.5%
	Total Graduate			Total Graduate			Total Graduate		
25-64	101,100	1,112,000	9.1%	125,537	1,381,000	9.1%	144,533	1,590,000	9.1%
65-over	9,900	700,000	1.4%	11,766	792,000	1.5%	13,163	886,000	1.5%
Total 25-over	111,000	1,812,000	6.1%	137,303	2,173,000	6.3%	157,696	2,476,000	6.4%

Sources: 1979 Enrollment data from NYSED, Higher Education Data System.
1979 Population pool data from U.S. Department of Commerce Educational Attainment in the United States March 1979 and 1978.
Projections were made from this data.

tions were obtained by multiplying the projected adult population pool by this participation rate. The assumptions previously presented concerning the projected adult population pools, therefore, will affect the adult enrollment projections presented in this report. Since insufficient data is available to compute historical trends in adult participation, future trends in adult participation could not be extended. Participation rates were, therefore, held constant at the 1979 rate.

According to State Education Department projections (NYSED Feb. 1980), full-time undergraduate enrollment of traditional college age students (under age 25) will decline by about 133,000 students by 1990. Assuming constant participation rates and using the adult pool for undergraduate education as the base for the rates, adult full-time undergraduate credit enrollment is projected to increase from about 66,000 in 1979 to about 83,000 in 1990 (see table 3). It will take 116,000 more adult students than the number projected to offset the full-time undergraduate enrollment decline of traditional college age students. The participation rate for adult full-time undergraduates would have to increase from 1.2 percent in 1979 to 3.0 percent in 1990 -- a 150 percent increase in the rate -- for this to occur.

Most adults participate in undergraduate education on a part-time basis because part-time enrollment interferes less with jobs and family responsibilities. Colleges seeking to offset full-time undergraduate enrollment declines will probably concentrate their efforts on attracting adults to part-time programs.

Because per-capita tuition from part-time students is less than tuition from full-time students, it takes the tuition income from several part-time undergraduates to equal the tuition income from one full-time undergraduate. By comparing the average tuition income generated by full- and part-time students in 1978, it was determined that it took 3.4 part-time undergraduates to equal the tuition income from one full-time undergraduate. Acknowledging, however, that there will be some additional administrative costs associated with increased part-time undergraduate enrollment, it can be estimated that instead of 3.4 it takes 4 part-time undergraduates to equal the tuition income from one full-time undergraduate.

Assuming constant participation rates and using the adult pool for undergraduate education as the base for these rates, it can be projected that part-time undergraduate enrollments for adults over 25 will increase from about 142,000 in 1979 to about 177,000 in 1990, an increase of 35,000 part-time undergraduates (see table 3). Since it takes about 4 part-time undergraduates to equal the tuition income from one full-time undergraduate, an increase of 35,000 part-time undergraduates will offset only 9,000 full-time undergraduates. Therefore in 1990, 107,000 full-time undergraduates will have to be offset by other types of adult students.

Assuming constant participation rates and using the adult pool for graduate education as the base for the rates, it can be projected that full-time graduate enrollment for adults over 25 will increase from about 30,000 in 1979 to about 42,000 in 1990, an increase of 12,000 students (see table 4). This reduces the 107,000 full-time undergraduates needed to be offset to 95,000.

Assuming constant participation rates and using the adult pool for graduate education as the base for the rates, part-time graduate enrollment for adults over 25 is projected to increase from about 82,000 to about

115,000 students, an increase of 33,000 students (see table 4). An assumption is made that it takes three part-time graduate students to equal the tuition income from one full-time undergraduate student. On the graduate level, an equivalent of three instead of four part-time students is used because graduate tuitions are typically higher than undergraduate tuitions. The increase of 33,000 part-time graduate students would, therefore, offset about 11,000 full-time undergraduates in 1990. This leaves 84,000 full-time undergraduates that have not been offset by adult enrollment.

In summary, the New York State Education Department projects that full-time undergraduate enrollment of traditional college age students (under age 25) will decline by about 133,000 students by 1990. This report projects that if participation rates are the same in 1990 as in 1979 only 49,000 of the 133,000 will be offset by adult credit enrollment increases caused by the expanding adult population pools. This means that 84,000 full-time undergraduates will not be offset by adult enrollment increases. For part-time undergraduate adult participation alone to offset this 84,000 full-time undergraduate enrollment decline, the adult part-time undergraduate participation rate would need to triple from 2.6 percent in 1979 to 7.8 percent in 1990.

Moderate participation rate increases at every degree level would offset only a small portion of the decline. If between 1979 and 1990 participation rates for full-time students increased by .3 percent and for part-time students by .7 percent, only 34,000 of the 84,000 full-time undergraduates would be offset. For adults to make up the enrollment loss, substantial increases in adult participation rates would have to occur.

Tables 1 and 2 project an increase in adult enrollment due to projected increases in the adult pools for undergraduate and graduate education and due to the fact that participation rates were held constant at 1979 levels. It should be pointed out that there are factors that can work to depress participation rates in the 1980's (NYSED Dec. 1979).

Adults will probably be an important component in the mix of students that will be needed to offset the expected decline of traditional age full-time undergraduates. Although there may be insufficient interest among adults to offset all of the expected decline in full-time undergraduate credit enrollment, adult credit enrollment can offset a significant portion of it. Colleges that ignore the adult market are ignoring a major source of students.

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BACK TO BASICS: WHAT THE ALUMNI SAY

Diana M. Green
Director, Office of Institutional Research

Jean V. Morlock
Associate for Institutional Research

State University of New York at Plattsburgh

History

The Alumni Survey was developed by the Institutional Research staff in cooperation with the Alumni Office and the Career Planning and Placement Office. The instrument incorporated the best of a previous (1974) survey and attempted to replicate some of the items on the current Freshman and Senior Surveys. The hope was to relate the responses of the most recent graduates to their earlier ratings as undergraduates, thereby providing the foundation for an extended longitudinal study

The Alumni Survey was sent to two groups of graduates, one group in the Spring of 1978, and the other in 1979. The first mailing was to the Class of 1977 and members of the classes of every fifth year prior to that back to 1947. The second year the process was repeated for the Class of 1978, and, similarly, back to 1948. The number of responses from each class are given in Table 1.

Results

A profile of Plattsburgh Alumni, based on this survey, provides evidence of the success of the Plattsburgh experience. Graduates of Plattsburgh are generally successful and satisfied with their work, and many have gone on to earn higher degrees. The data that generated these conclusions are summarized below. The first percent is from the 1977 group; the second percent, in parentheses ( ), is from the 1978 group.

1) 82 (86) of Plattsburgh Alumni are employed
2) the median salary range is $10,000 to $14,999
3) 77 (79) percent rated themselves as "satisfied" or "completely satisfied" with their work
4) 89 (90) percent feel they are "moderately" to "very successful"
5) 23 (22) percent are currently pursuing a graduate degree, while two percent are pursuing another undergraduate degree
6) 34 (35) percent have earned a higher degree since graduation from Plattsburgh.

Responses of recent alumni (1972-1978) were compared to those of earlier graduates (1968 and before). The earlier graduates indicated higher salaries, greater job satisfaction, better preparation and more success than alumni of more recent years. In addition, the older alumni gave higher ratings* to the college impact and contribution to success of the quality of faculty teaching, courses inside and outside the major field, vocational training, and aesthetic sensitivity, and say the BA or BS degree is a more important ingredient of success. On the other hand, recent graduates reported more college impact on personal development, reasoning ability, and quantitative thinking.

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* Differences in responses were statistically significant at $p < .05$, using a 2-tailed t-test.

Table 1. Description of Sample

	1977 Group		1978 Group	
	Year	N	Year	N
Number responding:	1977	290	1978	251
	1972	251	1973	183
	1967	98	1968	95
	1962	63	1963	48
	1957	60	1958	47
	1952	34	1953	33
	1947	23	1948	24
	Other	2	Other	1
	Total	821	Total	682
Number mailed:		2460		2661
Response rate:		33%		26%

The ratings of various Personal Goals and Achievements indicate that Plattsburgh has made a substantial contribution to its graduates in all areas that were deemed important to career success. Ratings were made on a five-point scale from 1 = none; to 5 = very much (see Fig. 1 for scale). All ratings of college impact fell in the "some" to "quite a lot" range, except for faculty advising, quantitative thinking, and study skills, which were also judged to be less essential to job success. In general, however, the impact of the college was rated significantly* lower than the importance to career success of the various aspects surveyed. Fig. 1 illustrates not only the relative significance of the various aspects, but also the disparity between their importance to career success and Plattsburgh's impact. The largest discrepancies occurred in "tolerance of others," "reasoning ability," "communication skills," and "study skills." This result differs somewhat from the findings of the 1976 ACM Survey of Liberal Arts Graduates as reported by Pace[4]. Of the six top-rated abilities only two, "communicating

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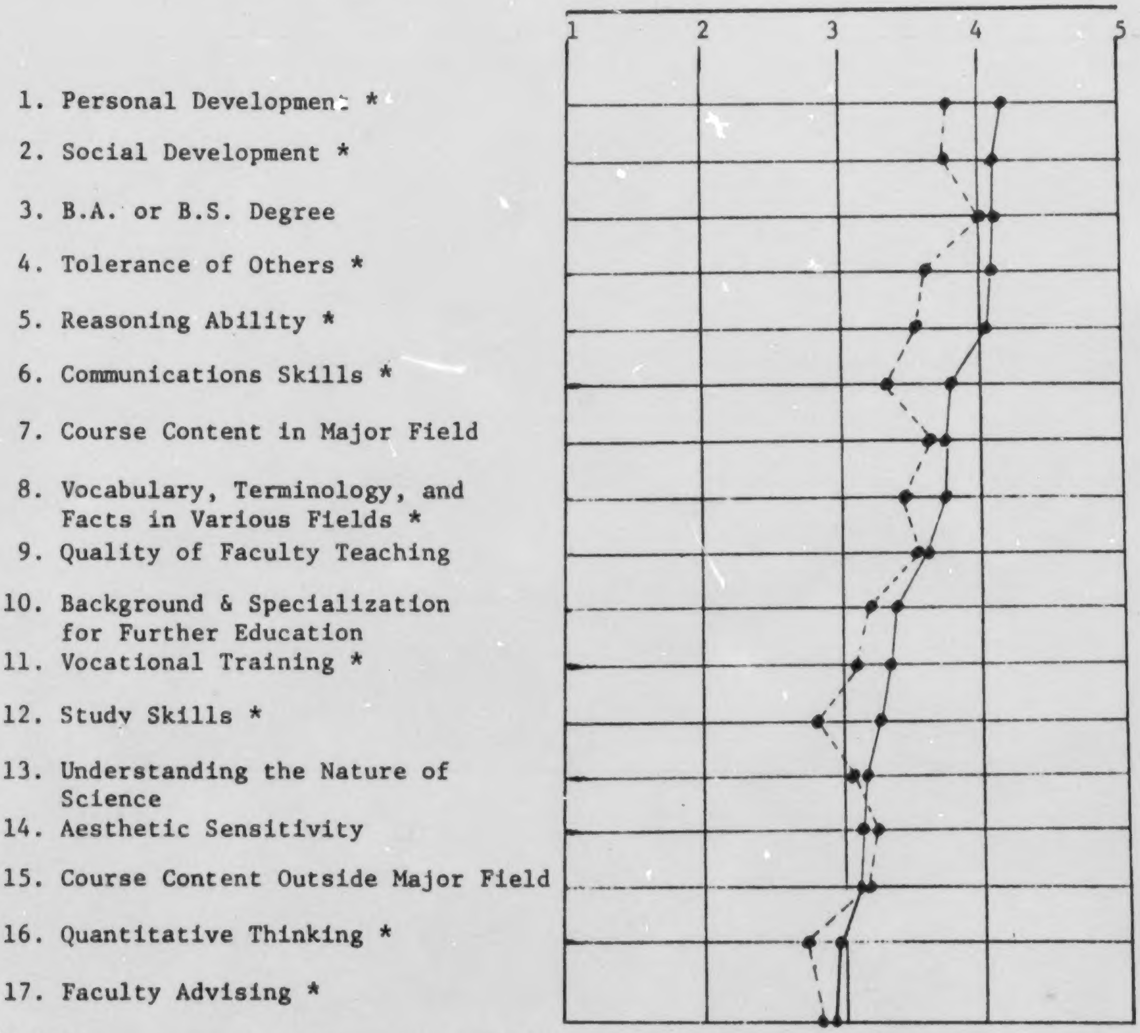
* Differences in responses were statistically significant at $p < .05$, using a 2-tailed t-test.

Scale =	1	2	3	4	5
	None	Very Little	Some	Quite A Lot	Very Much

_______ extent to which these aspects contribute to a successful career

------- amount of impact PSUC had in these areas



* difference is significant at $p < .05$ in both groups surveyed (1977 and 1978).

Fig. 1. Personal goals and achievements as rated by the 1977 group of Alumni.

orally effectively" and "functioning as a team member," displayed the gap between importance to success and what the college provided. The eleven colleges in the ACM study were primarily liberal arts institutions and did not offer the same breadth of career-oriented programs, and, therefore, are not truly compatible with Plattsburgh.

Plattsburgh graduates have found social and personal development, communications skills, and reasoning ability to be among the most important areas of development necessary for job success. This concurs with findings from other studies (Klemp, 1977[2]; Lindsey, 1977[3]), which have shown communication and interpersonal skills and general cognitive abilities to be highly related to job success. While the bachelor's degree is still considered an important ingredient of job success, course content in the major field falls below more general skills in importance. Previous studies have found a similar relationship between content and process; i.e., facts are forgotten, but cognitive styles persist and aid in on-the-job learning (Klemp, 1977[2]). Not surprisingly, course content outside the major is seen as less important than general social and cognitive skills or specific skills and knowledge; it is rated at about the same level as aesthetic sensitivity.

Questions

Although the size of the samples precludes too fine a breakdown, certain specific questions could be addressed:

1) *Were there programatic differences in Alumni responses to the survey?*

Because of the small numbers of respondents from the earlier classes; and, most importantly, the different patterns of enrollment in the last five years, the analysis of responses by undergraduate major was restricted to the two most recent years. Although no statistical tests have been performed, it appears that the most recent alumni were in majors that were roughly representative of their graduating class. However, there are proportionately fewer responses from majors in Psychology and the Social Sciences, and more from Health Services and Home Economics. These last two are almost exclusively female programs; in fact, the sample contains a higher proportion of females than did the graduating classes of the corresponding years.

Table 2 displays those items that were responded to differently ($p < .05$) by alumni in various major programs in both 1977 and 1978; however, only the mean for the 1978 class is shown in the table for simplicity's sake. Alumni who majored in Health Services rated more items in the Personal Goals and Achievements section higher than did the remaining respondents. They saw faculty advising, courses in the major, and vocational training as more important than did graduates of other programs. Education majors reported the importance of the BA or BS degree, vocational training, and aesthetic sensitivity as the most significant, while Biology majors were unique in their higher ratings of the contribution to success and PSUC's impact on "understanding the nature of science, experimentation, and theory." Business majors had the only significantly lower ratings. These were on the impact of PSUC in the areas of quality of faculty teaching, faculty advising, background for further education, and understanding the nature of science. (Some of these responses speak to the high student/faculty ratio, which occurred as a result of the early, rapid expansion of the business program.) However, Business majors reported significantly higher salaries, as did Health Science majors, while Education majors reported significantly lower incomes.

The three major areas exhibiting unique response patterns, Business, Health Services, and Education, are highly vocationally-oriented programs, raising the second question:

> 2) *Are alumni who majored in professional fields different from other graduates?*

In order to investigate the possible differences between "career" programs and others, the total sample of alumni in the following major programs were grouped together:

Professional

- Business
- Computer Science
- Education
- Health Services
- Home Economics

Liberal Arts

- Agriculture & Natural Resources
- Architecture & Environmental Design
- Biological Sciences
- Communications
- Fine, Applied, & Performing Arts
- Foreign Languages
- Interdisciplinary Studies
- Letters
- Mathematics & Statistics
- Physical Sciences
- Psychology
- Public Affairs Services
- Social Sciences
- Other

The results of the analysis are given in Table 3. In most part, the same items emerge as in the earlier comparison of responses of recent alumni from individual major programs. In both years, 1977 and 1978, the professional group rated higher the contribution to success of the BA or BS degree and also the impact of PSUC, as well as contribution to success of courses in the major field and vocational training. There were significantly ($p < .05$) more females in the professional group, undoubtedly the result of the preponderance of Nursing, Home Economics, and Education majors in that cluster. Business and Computer Science, although predominently male, did not contribute a large number of responses to the group in 1977 nor 1978 because they are new programs that

Table 2. Items where Alumni in Separate Majors Differed Significantly* from all Remaining Alumni in Both 1977 and 1978 Classes

	Higher	1978 Mean for Major	Lower	1978 Mean for Major	1978 Average Response
Gross Annual Income: 2 = $5,000 - 7,499 3 = 7,500 - 9,999 4 = 10,000 - 14,999	Business Health	3.96 3.82	Education	2.81	3.31
PERSONAL GOALS & ACHIEVEMENTS					
BA or BS Degree - Contribution to Success	Education	4.31			4.00
Quality of Faculty Teaching-Impact of PSUC			Business	3.12	3.53
Faculty Advising-Contribution to Success	Health	3.45			2.98
Faculty Advising-Impact of PSUC	Health	3.37	Business	2.32	2.95
Courses in the Major Field-Contribution to Success	Health	4.21			3.77
Courses in the Major Field-Impact of PSUC	Health	4.00			3.67
Vocational Training-Contribution to Success	Health	3.71			3.19
Vocational Training-Impact of PSUC	Health Education	3.24 3.47			2.92
Background for Further Education-Impact of PSUC			Business	2.75	3.31
Aesthetic Sensitivity-Contribution to Success	Education	3.40			3.07
Understanding the Nature of Science-Contribution to Success	Biology	3.79			3.12
Understanding the Nature of Science-Impact of PSUC	Biology	4.36	Business	2.50	3.14

* p <.05

Table 3. Comparison of Responses of Alumni in Professional* Majors and All Others

Items where Professional Majors' Responses were Significantly (p <.05) Different from Other Majors:

	Professional		Others	
	77 Group	78 Group	77 Group	78 Group
Sex (1 = Male, 2 = Female)	1.79	1.80	1.47	1.38
Gross Annual Income (3 = $7,500- 9,999; 4 = $10,000-14,999)		3.44		3.09
GOALS & ACHIEVEMENTS				
Items Rated HIGHER by Professional Studies Majors:				
The BA or BS Degree				
Contribution to Success	4.04	4.21	3.71	3.68
Impact of PSUC		3.99		3.65
Quality of Faculty Teaching				
Contribution to Success		3.69		3.36
Faculty Advising				
Contribution to Success		3.13		2.76
Courses in the Major Field				
Contribution to Success	3.97	4.03	3.51	3.36
Impact of PSUC	3.76	3.85	3.48	3.39
Tolerance & Understanding of Others				
Contribution to Success	4.23		3.99	
Vocational Training				
Contribution to Success	3.44	3.49	3.10	2.72
Impact of PSUC	3.24	3.20	2.65	2.49
Items Rated LOWER by Professional Studies Majors:				
Understanding Science, Experimentation & Theory				
Impact of PSUC		3.00		3.34
NUMBER OF CASES	563	483	256	199

*Business, Computer Science, Education, Health Services, Home Economics have not yet graduated large numbers of students.

In only the 1978 group of professional majors, significantly higher ratings were found in the contribution to success of the quality of faculty teaching and faculty advising. As expected, the salary level for the career-oriented cluster exceeds that of the Liberal Arts majors, but only for the 1978 group. The relationship between salaries and vocational programs led to the third question:

> *3) Do those alumni who are pursuing a career in a field cognate to their undergraduate major report different levels of satisfaction, salary, etc.?*

The decision was made to limit this investigation to the two most recent classes and to use only alumni who reported being presently employed. Of the 251 in the 1978 class, 203 (81%) were employed; for 1977 the figure was 231 (80%). These percentages would be higher if alumni who were pursuing a graduate degree, or were otherwise not available, were excluded. Of the fields where sufficient numbers existed, the largest percentage of those employed in their major field occurred in the Health Services, where 93% in 1977 and 89% in 1978 were employed in a related job. The next highest percents were in Education, with 79% and 73% respectively; and Business, with 68% and 87%. In total, 56% of those working in 1977 and 59% in 1978 report employment in a field cognate to their undergraduate major. The 1978 figure is, in fact, identical to the percentage of alumni professionally employed inside [their] field as reported in the 1977-78 Annual Report of the Office of Career Planning and Placement[1]*. Those alumni employed outside their field of study were primarily in the Social Sciences and Psychology. Home Economics majors were the most evenly divided, with 57% and 58% employed in the field and 43% and 42% employed in an unrelated job. The fields with consistently lowest employment rates were Fine and Applied Arts, Physical Sciences, and Psychology. Caution is advised in interpreting these results because these data do not reflect the educational or motivational status of the alumni. Some of the most recent graduates are full-time graduate students, and others are not actively seeking employment. The employment data is given here only in order to put the remainder of the survey results into proper perspective.

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* Data were based on a 61% response rate from 1977-78 graduates.

The two groups of employed alumni were divided into those employed in their field and those employed in some other area. A t-test for significant differences in the responses of these two groups was performed and the results are shown in Table 4. In both years, those employed in a cognate field have higher ratings of satisfaction at work and of how well their studies had prepared them. They also rated higher both the contribution to success and the impact of PSUC, in regard to the BA or BS degree and vocational training, as well as the contribution to success of the quality of faculty teaching. The relationship noted here is probably an example of the finding reported by Solmon, Bisconti, and Ochsner, 1977[5]; "Whether a job is related to the major may vary in importance as a determinant of job satisfaction according to major field." More than half of those employed in a related field majored in Education or Health Services, both highly vocationally-oriented programs.

Summary and Conclusions

The results of a survey sent to two groups of alumni, covering the years 1947 to 1978 in five-year intervals, provide answers to some basic questions about career patterns, job satisfaction, and the influence of Plattsburgh on its students. The significant effects of the college experience, as reported by those alumni responding to the survey

Table 4. Items which Differentiate* Alumni whose Occupational Field Matches their Undergraduate Major from Other Employed Alumni

	Mean Response			
	1977		1978	
	Same	Diff	Same	Diff
SEX 1 = Male; 2 = Female	--	--	1.79	1.47
GROSS ANNUAL INCOME 3 = $7,500-9,999 4 = $10,000-14,999	--	--	3.65	3.27
SATISFACTION AT WORK 1 = Completely satisfied 4 = Completely dissatisfied	1.96	2.29	1.92	2.24
STUDIES PREPARED FOR WORK 1 = Excellent 4 = Poor	2.04	2.54	2.12	3.14
PERSONAL GOALS & ACHIEVEMENTS 1 = None 5 = Very Much				
BA or BS Degree				
Contribution to Job Success	4.19	3.62	4.31	3.65
Impact of PSUC	4.09	3.60	4.01	3.68
Quality of Faculty Teaching				
Contribution to Job Success	3.70	3.36	3.75	3.31
Faculty Advising				
Contribution to Job Success	--	--	3.29	2.66
Courses in Major				
Contribution to Job Success	4.05	3.39	--	--
Impact of PSUC	3.85	3.40	--	--
Vocational Training				
Contribution to Job Success	3.45	3.02	3.63	2.67
Impact of PSUC	3.19	2.83	3.26	2.54
Personal Development				
Impact of PSUC	4.05	3.74	3.96	4.30**
Aesthetic Sensitivity				
Contribution to Job Success	--	--	2.91	3.28
Impact of PSUC	--	--	3.09	3.44
Reasoning Ability				
Impact of PSUC	--	--	3.63	3.90
Understanding Science				
Contribution to Job Success	3.34	2.95	--	--
OVERALL EVALUATION 1 = Excellent; 4 = Poor	--	--	1.73	1.55
NUMBER OF CASES	129	102	118	85
	Total 231		Total 203	

* p <.05 using a 2-tailed t-test

** Reversal

include:

1) Graduates of Plattsburgh are generally successful and satisfied with their work, and many have gone on to earn a higher degree. They rate their overall experience with Plattsburgh as "good" to "excellent," as well as their preparation for later work or studies.

2) The most important areas related to job success were: personal and social development, tolerance of others, and reasoning ability. This is not surprising, because success usually results from moving up into management positions, which require more of these general abilities and less content orientation or specific skills.

3) When evaluating various personal goals and achievements, the impact of the college was rated significantly lower than the importance to career success of 10 out of 17 aspects surveyed. The largest discrepancies occurred in: tolerance of others, reasoning ability, communication skills, and study skills. This evidence strongly supports the need to return to an emphasis on general education; i.e., getting back to basics. Fortunately, Plattsburgh has instituted such a program recently. It will be interesting to survey our current freshmen and sophomores, when they become alumni, to see if we have closed this gap.

4) Alumni who majored in professional fields (Business, Computer Science, Education, Health Services, and Home Economics) rated higher the importance of their BA and BS degree, vocational training, and courses in their major field than did the remainder of the alumni.

5) The most recent graduates who are employed in a field cognate to their undergraduate major gave higher ratings of satisfaction at work and how well their studies had prepared them than did other employed alumni. They also ranked higher the importance of their BA or BS degree, vocational

training, and the quality of faculty teaching.

Because the Professional Studies major is most apt to become employed in his/her field of study, specific vocational training is of considerable value. However, the graduates of career programs and the Liberal Arts majors share the perception that basic general education skills, such as in communication, reasoning, and the interpersonal area, have the highest importance or relationship to success.

REFERENCES

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3 Lindsey, F. G. Clarkson College of Technology, Self-Assessment Project: Elements of a college education leading to a successful professional professional career. Unpublished project report, July, 1977.

4 Pace, C. R. *Measuring Outcomes of College*, San Francisco: Jossey-Bass, 1979.

5 Solmon, L. C., Bisconti, A. S., Ochsner, N. L. *College as a Training Ground for Jobs*. New York: Praeger Publishers, 1977.

THE COURSE AND SECTION ANALYSIS SYSTEM (CASA)

Kathleen Kopf
Associate for Institutional Research
and Analytical Studies
State University of New York

INTRODUCTION

The Course and Section Analysis (CASA) system represents the culmination of over a decade of hard work and dedication by the campuses and the Central Staff of the State University of New York. Developed in the early 1970's, CASA is an automated information system designed to collect, process and report information on faculty, student and department instructional workload; costs of instruction as measured by such things as credit hours and/or contact hours; utilization of instructional facilities; course content and mix; as well as several other aspects of higher education typically reviewed and analyzed by managers. As with all enrollment reports submitted to the Central Staff Office of Institutional Research and Analytical Studies, the census date for CASA for full semester courses is the end of the third week of classes.

Although the capability to develop and process a CASA file for each semester or quarter exists, at the present time only the Fall semester for each year is used in intercampus summary reports such as the STATISTICAL ABSTRACTS. In Fall 1979, thirty-one (31) State-operated/funded institutions and four (4) community colleges processed CASA files. Fourteen (14) campuses processed a Spring 1980 file; no campus at this time submits summer data.

CASA was constructed so that its terms and definitions would be generally compatible with the Higher Education General Information Survey (HEGIS) and the National Center for Higher Education Management Systems (NCHEMS/WICHE). Application of the guidelines, procedures, definitions and terms of CASA is performed as consistently and uniformly as possible, thus allowing meaningful inter- and intra-campus studies as well as selected national comparisons. While various enhancements have been made since the system was implemented, the basic structure dates back to 1972. This continuity facilitates the conduct of trend studies for participating institutions and provides State University an unusual opportunity for institutional and policy research.

COMPONENTS OF THE SYSTEM

CASA draws upon several files for its data. Employee and position information for an entire campus is obtained from the University-wide Personnel Data System for the State-operated/funded institutions and directly from participating community colleges. CASA contains data on sections of instruction; it does not contain data on individual students (headcount).

Copies of the transaction card and tape layouts for the CASA Personnel File and the CASA Course and Section File are contained in the middle of this section. These layouts display all of the data fields that participating institutions are required to submit.

Although we encourage all campuses to submit their Course and Section File on magnetic tape, this is but one of four modes available to State-operated/funded campuses and one of three modes available to community colleges for submitting the required data. Any campus may instead elect to submit 80-column punched cards or file creation forms to establish a

Course and Section File. The State-operated/funded campuses may also use a terminal network to submit the required data. Regardless of the medium chosen, forty (40) fields for each section of a course are required.

Once a Course and Section File for a given semester is submitted, the State-wide Coordinator also establishes a CASA Personnel File for participating campuses. You will remember that the source of personnel data varies depending upon the type of institution involved. In addition to these two components, CASA draws upon a Chart of Accounts File and a Physical Space Inventory File. While community colleges prepare and submit their Chart of Accounts File to the State-wide Coordinator, this file is maintained Centrally for the State-operated/funded institutions. The Chart of Accounts File contains information on all authorized departments and serves as an important crosswalk to the SUNY Accounting Master File. All campuses participate in the State University Physical Space Inventory system, thus permitting the automatic accessing of information for every space including its net square foot area, number of stations, status code (current use, inactive space, alteration, unusable), etc. CASA derives a total of 13 fields from the Physical Space Inventory File.

At the end of the CASA cycle when information on support costs is desired, the State University Accounting Master File is accessed for the State-operated/funded institutions. The direct costs of instruction on CASA include the salaries of all persons who teach. Indirect costs are derived from data in the Accounting Master File and include the following:

a. salaries of all employees budgeted to the department who do not teach

b. temporary service

c. supplies and expense

d. equipment

CASA PERSONNEL FILE

TRANSACTION CARD AND TAPE LAYOUT TO CREATE RECORDS

	CAMPUS CODE	ACTION CODE	LINE ITEM NUMBER	
Create VACANT ITEM		1		
	9 9 9 9	9	9 9 9 9 9 9	9 (each column 12–80)
	1 2 3 4	5	6 7 8 9 10 11	12 13 14 … 78 79 80

	CAMPUS CODE	ACTION CODE	LINE ITEM NUMBER	SOCIAL SECURITY NUMBER	LAST NAME	INITIAL	ITEM FTE	SALARY RATE $	LEAVE	FIRST SPLIT (required)				SECOND SPLIT (only if needed)			
Required Part-1 of 'create and fill' LINE ITEM		2								DEPARTMENT	TITLE CODE	FISCAL FTE	FISCAL SALARY AMOUNT $	DEPARTMENT	TITLE CODE	FISCAL FTE	FISCAL SALARY AMOUNT $
	9 9 9 9	9	9 9 9 9 9 9	9 9 9 9 9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 9	9 9 9	9 9 9 9 9	9	9 9 9 9 9	9 9 9 9	9 9 9	9 9 9 9 9	9 9 9 9 9	9 9 9 9	9 9 9	9 9 9 9 9
	1 2 3 4	5	6 7 8 9 10 11	12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37	38 39 40	41 42 43 44 45	46	47 48 49 50 51	52 53 54 55	56 ▲ 57 58	59 60 61 62 63	64 65 66 67 68	69 70 71 72	73 ▲ 74 75	76 77 78 79 80

	CAMPUS CODE	ACTION CODE	LINE ITEM NUMBER	SOCIAL SECURITY NUMBER	LAST NAME	INITIAL	ITEM FTE	SALARY RATE $	LEAVE	BIRTH-DATE			SEX	COMPL	CITIZEN CODE		TENURE DATE			
Required Part-2 of 'create and fill' LINE ITEM (COMMUNITY COLLEGES ONLY)		7								MONTH	DAY	YEAR					MONTH	DAY	YEAR	
	9 9 9 9	9	9 9 9 9 9 9	9 9 9 9 9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 9	9 9 9	9 9 9 9 9	9	9 9	9 9	9 9	9	9	9	9	9 9	9 9	9 9	9 (each column 63–80)
	1 2 3 4	5	6 7 8 9 10 11	12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37	38 39 40	41 42 43 44 45	46	47 48	49 50	51 52	53	54	55	56	57 58	59 60	61 62	63 64 65 … 78 79 80

	CAMPUS CODE	ACTION CODE	LINE ITEM NUMBER	SOCIAL SECURITY NUMBER	LAST NAME	INITIAL	ITEM FTE	SALARY RATE $	LEAVE	THIRD SPLIT (only if needed)				FOURTH SPLIT (only if needed)			
Required Part-3 only if budgeted to 3rd and 4th department		8								DEPARTMENT	TITLE CODE	FISCAL FTE	FISCAL SALARY AMOUNT $	DEPARTMENT	TITLE CODE	FISCAL FTE	FISCAL SALARY AMOUNT $
	9 9 9 9	9	9 9 9 9 9 9	9 9 9 9 9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 9	9 9 9	9 9 9 9 9	9	9 9 9 9 9	9 9 9 9	9 9 9	9 9 9 9 9	9 9 9 9 9	9 9 9 9	9 9 9	9 9 9 9 9
	1 2 3 4	5	6 7 8 9 10 11	12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37	38 39 40	41 42 43 44 45	46	47 48 49 50 51	52 53 54 55	56 ▲ 57 58	59 60 61 62 63	64 65 66 67 68	69 70 71 72	73 ▲ 74 75	76 77 78 79 80

	CAMPUS CODE	ACTION CODE	LINE ITEM NUMBER	SOCIAL SECURITY NUMBER	LAST NAME	INITIAL	ITEM FTE	SALARY RATE $	LEAVE	FIFTH SPLIT (only if needed)				SIXTH SPLIT (only if needed)			
Required Part-4 only if budgeted to 5th and 6th department		9								DEPARTMENT	TITLE CODE	FISCAL FTE	FISCAL SALARY AMOUNT $	DEPARTMENT	TITLE CODE	FISCAL FTE	FISCAL SALARY AMOUNT $
	9 9 9 9	9	9 9 9 9 9 9	9 9 9 9 9 9 9 9 9	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 9	9 9 9	9 9 9 9 9	9	9 9 9 9 9	9 9 9 9	9 9 9	9 9 9 9 9	9 9 9 9 9	9 9 9 9	9 9 9	9 9 9 9 9
	1 2 3 4	5	6 7 8 9 10 11	12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	36 37	38 39 40	41 42 43 44 45	46	47 48 49 50 51	52 53 54 55	56 ▲ 57 58	59 60 61 62 63	64 65 66 67 68	69 70 71 72	73 ▲ 74 75	76 77 78 79 80

9 (each column 1–80)
1 2 3 4 5 6 7 8 9 10 11 12 … 78 79 80

197

TAPE MUST BE IN TRANSACTION FORMAT

CASA PERSONNEL FILE

TRANSACTION CARD AND TAPE LAYOUT TO UPDATE OR DELETE RECORDS

To replace ALL data fields in a line item (fill vacant line or replace present occupant with another)	CAMPUS CODE 9999 1 2 3 4	ACTION CODE 3 9 5	LINE ITEM NUMBER 999999 6 7 8 9 10 11	REST OF RECORD REMAINS BLANK 999999999999999999999999999999999999999999999999999999999999999999999 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
To place non-blank fields in line item (make corrections to specific data fields - splits 1 & 2)	CAMPUS CODE 9999 1 2 3 4	4 9 5	LINE ITEM NUMBER 999999 6 7 8 9 10 11	SOCIAL SECURITY NUMBER 999999999 12 13 14 15 16 17 18 19 20	PLACE DATA ONLY IN FIELDS TO BE UPDATED. FOR LOCATION SEE INSTRUCTIONS TO CREATE RECORDS. 999999999999999999999999999999999999999999999999999999999999 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
To place non-blank fields in line item (make corrections to specific data fields - splits 3 & 4)	CAMPUS CODE 9999 1 2 3 4	8 9 5	LINE ITEM NUMBER 999999 6 7 8 9 10 11	SOCIAL SECURITY NUMBER 999999999 12 13 14 15 16 17 18 19 20	TO UPDATE A DATA FIELD IN THE 3RD OR 4TH ACCOUNTING BLOCK (SPLIT) THIS RECORD MUST BE PRECEDED BY AN 'ACTION TYPE-4' RECORD WITH ALL BLANK FIELDS FOLLOWING SOCIAL SECURITY NUMBER. PROCEED AS FOR ACTION TYPE-4 RECORD. 999999999999999999999999999999999999999999999999999999999999 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
To place non-blank fields in line item (make corrections to specific data fields - splits 5 & 6)	CAMPUS CODE 9999 1 2 3 4	9 9 5	LINE ITEM NUMBER 999999 6 7 8 9 10 11	SOCIAL SECURITY NUMBER 999999999 12 13 14 15 16 17 18 19 20	PROCEED AS FOR ACTION TYPE-8 RECORD 999999999999999999999999999999999999999999999999999999999999 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
To delete a line item	CAMPUS CODE 9999 1 2 3 4	5 9 5	LINE ITEM NUMBER 999999 6 7 8 9 10 11	REST OF RECORD REMAINS BLANK 999999999999999999999999999999999999999999999999999999999999999999999 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
To vacate presently filled line item	CAMPUS CODE 9999 1 2 3 4	6 9 5	LINE ITEM NUMBER 999999 6 7 8 9 10 11	REST OF RECORD REMAINS BLANK 999999999999999999999999999999999999999999999999999999999999999999999 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	

200 210

TAPE MUST BE IN TRANSACTION FORMAT

CASA COURSE FILE

TRANSACTION CARD AND TAPE LAYOUT

CARD-1

Field		Columns
CAMPUS	9 9 9 9	1 2 3 4
TEACHING DEPT.	9 9 9 9 9	5 6 7 8 9
DISC.	9 9 9 9	10 11 12 13
COURSE ID PREFIX	9 9 9 9 9 9 9 9 9 9	14 15 16 17 18 19 20 21 22 23
COURSE LEVEL	9	24
PAGE	9 9 9 9	25 26 27 28
LINE	9 9 9	29 30 31
A/B/C	9	32
COURSE ID PRINT	9 9 9 9 9 9	33 34 35 36 37 38
SECTION	9 9 9	39 40 41
INSTR TYPE	9	42
TERM	9 9 9	43 44 45
CREDIT VALUE	9 9 9	46 47 ▲ 48
CREDIT TYPE	9	49
SCHEDULED LOCATION: BUILDING	9 9 9 9 9 9	50 51 52 53 54 55
SCHEDULED LOCATION: ROOM	9 9 9 9 9 9	56 57 58 59 60 61
SCHEDULED LOCATION: DAYS	9 9 9 9 9 9 9	62 63 64 65 66 67 68
SCHEDULED LOCATION: BEGIN TIME	9 9 9 9	69 70 ▲ 71 72
SCHEDULED LOCATION: END TIME	9 9 9 9	73 74 ▲ 75 76
OVER RIDE	9	77
REQD SPACE	9	78
SUB CAMPUS	9	79
ACTION	9	80

CARD-2

Field		Columns
CAMPUS	9 9 9 9	1 2 3 4
TEACHING DEPT.	9 9 9 9 9	5 6 7 8 9
DISC.	9 9 9 9	10 11 12 13
COURSE ID PREFIX	9 9 9 9 9 9 9 9 9 9	14 15 16 17 18 19 20 21 22 23
COURSE LEVEL	9	24
PAGE	9 9 9 9	25 26 27 28
LINE	9 9 9	29 30 31
CONTACT HOURS: FACULTY	9 9 9 9	32 33 34 ▲ 35
CONTACT HOURS: STUDENTS	9 9 9 9	36 37 38 ▲ 39
ENROLLMENT: TOTAL	9 9 9	40 41 42
ENROLLMENT: UNDERGRADUATES: LOWER	9 9 9	43 44 45
ENROLLMENT: UNDERGRADUATES: UPPER	9 9 9	46 47 48
ENROLLMENT: GRADUATES: PROF.	9 9 9	49 50 51
ENROLLMENT: GRADUATES: G1	9 9 9	52 53 54
ENROLLMENT: GRADUATES: G2	9 9 9	55 56 57
SOCIAL SECURITY NUMBER OF INSTRUCTOR	9 9 9 9 9 9 9 9 9	58 59 60 61 62 63 64 65 66
BLANK	9 9 9 9 9 9 9 9 9 9 9 9 9	67 68 69 70 71 72 73 74 75 76 77 78 79
ACTION	9	80

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

ACTIONS:	
1 - add or replace card image (card-1)	3 - place non-blank fields in first card image
2 - add or replace card image (card-2)	4 - place non-blank fields in second card image
5 - delete record	

Course and Section Analysis System Overview

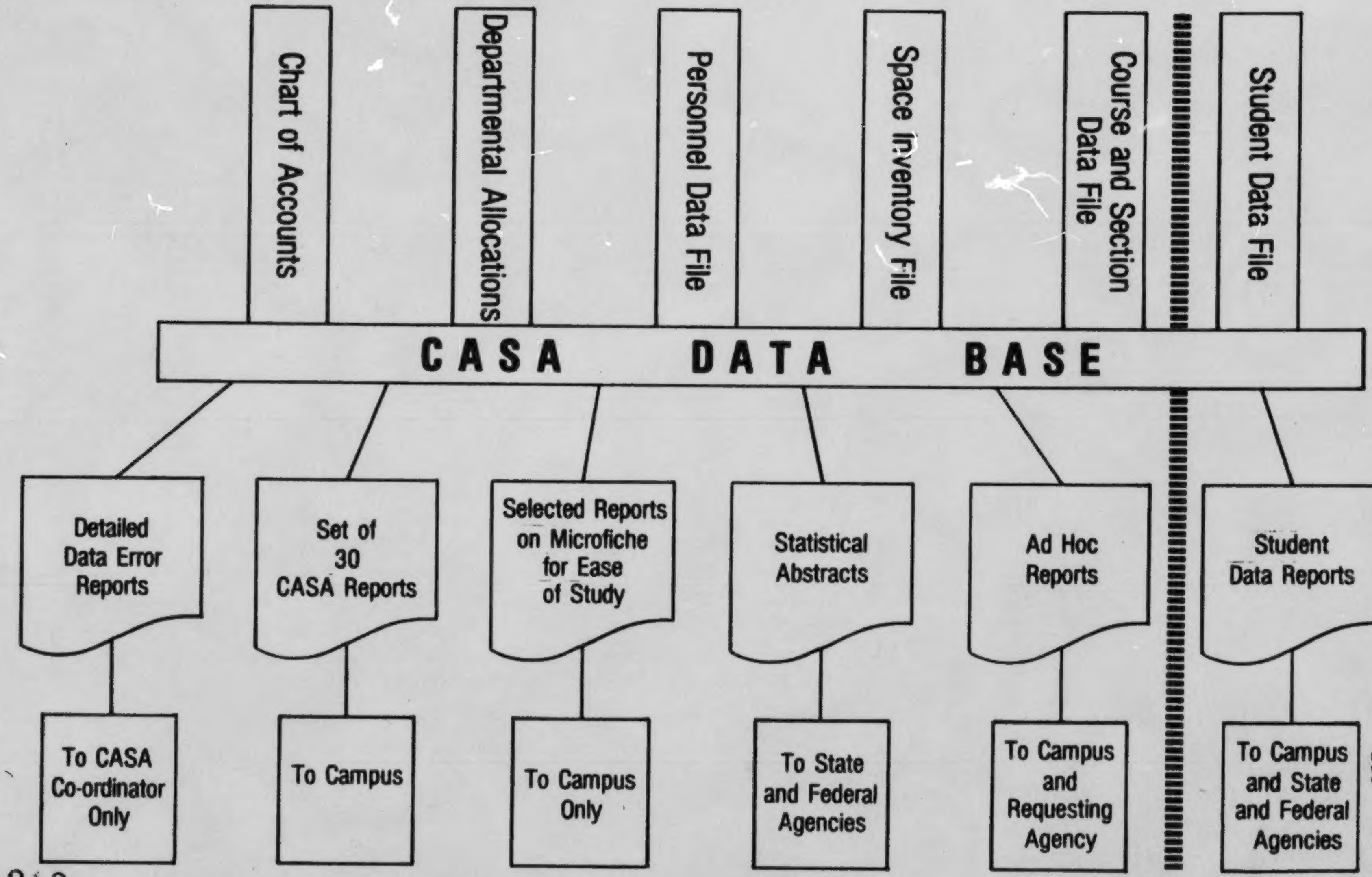

Chart of Accounts

Departmental Allocations

Personnel Data File

Space Inventory File

Course and Section Data File

Student Data File

CASA DATA BASE

Detailed Data Error Reports

To CASA Co-ordinator Only

Set of 30 CASA Reports

To Campus

Selected Reports on Microfiche for Ease of Study

To Campus Only

Statistical Abstracts

To State and Federal Agencies

Ad Hoc Reports

To Campus and Requesting Agency

Student Data Reports

To Campus and State and Federal Agencies

e. recharges (computer services, storehouse, telephone and telegraph, mail and messenger, central duplicating, etc.)

f. other (e.g., travel)

Indirect cost calculations for the community colleges are based upon expenditure data provided directly by the institution and do not presently contain the breakdowns available for the State-operated/funded campuses.

A schematic overview of the CASA system and its components is presented on the preceding page. In the future, there will be a link-up between CASA and this office's Student Data File. When this occurs, it is anticipated that modeling, projection, and graphics capabilities will be pursued.

BENEFITS

A major benefit of CASA is its series of 30 production reports. This entire series is sent to participating institutions for use in the internal management planning and decision-making process. At the end of the year, many reports are supplied to the campuses on microfiche for ease of storage. By examining several years of data, trend information can be quickly gathered to help with the difficult management decisions these times demand. A copy of their State University CASA Master File is also available to participating campuses. This contains a couple of hundred fields of data, data that most campuses cannot assemble locally and which can be translated into exception or trend information for effective planning and control. Campuses also receive copies of 2 of the 30 production reports for their sister institutions.

CASA helps facilitate the establishment of routine lines of communication among various offices on a campus and also facilitates the linkage of data files such as the student registration, personnel, and scheduling files. The advantages and benefits of CASA grow each year as we interact with campuses in reviewing and attempting to make the system and its reports more attuned to local information needs. CASA, although structured, is a dynamic system, one which can help satisfy a host of local data requirements.

Among the primary benefits associated with the CASA system are the following:

1. Consistent, uniform procedures help ensure the integrity of the data. Individual differences are accommodated but through common terms and formulas.

2. Credibility of CASA with various offices in Central Administration as well as with such agencies as the NYS Division of the Budget and Department of Audit and Control make it a frequently referenced system.

3. Inasmuch as CASA is the only University-wide system on instructional costs and faculty instructional workload, summary reports are widely circulated and used. For the past few years, the most important summary report has been the STATISTICAL ABSTRACTS. Copies of this for the State-operated/funded institutions are forwarded to many State agencies and departments.

4. Established systems such as CASA have the advantage of being tried, tested, proved and used. Our programs have been thoroughly debugged and are periodically reviewed to determine if they may be made more useful through one or more enhancements.

5. Informed decision making depends upon accurate, complete and timely reports. CASA contains a wealth of information on each section of every credit course plus required non-credit courses. Any one of thirty (30) production reports can be created on 24-hour notice. These reports may be used by:

- chairpersons in dealing with faculty on their teaching load or overload for forthcoming semesters (CASA-15)

- by deans and directors in formulating budget requests or plans for their departments (CASA-15, 16, 17)
- by their scheduling officer in making future room assignments (670R, 670S produced by the State University Office of Space Management and Development)
- by the president and vice presidents in fiscal and long-range planning and in dealing with officials in Central Administration as well as officials in other State agencies (CASA 17, 30).

6. Documentation of need is possible through CASA. The costs of instruction and the utilization of instructional facilities can be accurately and completely recorded, and this information used during the development of the annual budget request.

An institution's heavy instructional workload and utilization of facilities, when recorded in CASA, becomes available to the SUNY Office of Space Management and Development as well as all other Capital Facilities areas. Assistance can only become available when need is recorded and made known.

7. Intercampus summaries and comparisons are possible through the CASA system.

8. Information exchange programs between the campuses are facilitated. Several campuses have entered into reciprocal agreements whereby they exchange CASA Master Files through Central Staff so that intercampus analyses may be done locally.

9. A historical record and trend studies are possible through successive semesters of participation in the project. The appeal of certain courses or programs may be measured over a period of time as can faculty resources, support costs, utilization of specific rooms and buildings, class size, etc.

THE FUTURE

The CASA-related goals of Central Staff may be recorded under the following five broad categories:

1. a major redocumentation effort (existing documentation dates back to 1974-75 and was never completed)
2. enhancements to existing reports
3. new reports and/or graphics
4. summary intercampus reports produced in January or early February by discipline groupings, in April after the State University Accounting Master File has been updated with all end-of-year expenditures and encumbrances.
5. regional workshops and training sessions

These items represent a large undertaking and we are depending upon the help of our campus CASA Coordinators in making it successful. We are counting upon them to review and comment upon the redocumentation materials as they are released. Coordinators want to know exactly what is in each field, how it was derived, and how to use it.

Through the comments and suggestions of our Coordinators, we have been able to make existing reports more useful. We have asked Coordinators for copies of reports they produce locally as well as their suggestions as to new reports they would like produced from the CASA system.

Campuses are anxious to close the CASA cycle earlier. For the Fall 1980 cycle, Course and Section data must be submitted by November 17. We hope to bring the cycle to closure no later than February 15. There are few systems where as much data from as many different sources come together as in CASA. Our data comes from the Registrar's, Scheduling, Personnel, Budget, Accounting, and Physical Space Inventory Files. Thorough, complete and timely analytic data are needed for financial planning and resource allocation. CASA constitutes an excellent input.

The Interrelationship Between Institutional Research and the Budget Development Process

by

Jill F. Campbell and Edward Kumar
State University College, Brockport, New York

As legislative and taxpayer demands for fiscal accountability increase, and as the competition for decreasing financial resources increases, the need for statistical data to support public higher education budget requests is accentuated. It is our contention that the Institutional Researcher can play a vital role in providing the information needed in sound budgeting. This paper attempts to define the role of the Institutional Researcher in that perspective. Since the budget process is a method of obtaining and allocating the resources necessary to achieve institutional goals, it is important that as analysts we understand and contribute to that process.

One of the largest public higher education systems in the nation, the State University of New York (SUNY), is composed of 64 campuses. Each campus develops its own mission statement within the overall master plan of the SUNY system. Accordingly, each institution must develop its own budget which is submitted to SUNY Central Administration. SUNY's budgeting process involves a series of complex activities with various degrees of interaction involving campus and central administrators, Trustees, members of the Governor's staff and the State legislature.

All the individual campus budget requests are reviewed centrally and a budget request for the entire SUNY system is formulated. These requests are then submitted to the Governor who treats them as one portion of the Executive Budget for the entire state.

The process of preparing the budget is a continuous one, beginning some twelve months before actual implementation. New York State, and thus SUNY as an agency of the state, operates within a fiscal year of April 1st through the following March. In May, shortly after the fiscal year begins, the local campus Budget Officer, or Business Officer, provides instructions to Deans, Department Heads, and other unit administrators on the preparation of the budget for the following fiscal year.

It must be noted that in the State of New York there are actually three types of budgets developed for any one fiscal year; the REGULAR BUDGET, the DEFICIENCY BUDGET, and the SUPPLEMENTAL BUDGET. The REGULAR BUDGET provides the funding for operating expenses and capital construction programs for the coming fiscal year. The DEFICIENCY BUDGET requests additional monies for those items which may or may not have been requested in the Regular Budget. For instance, if there were insufficient funds for the current fiscal year, due to skyrocketing fuel costs, then increased monies would be needed to meet this increased expense. The SUPPLEMENTAL BUDGET requests appropriations for items that were unknown at the time of the Regular Budget, and, therefore, were not included in the Regular Budget, e.g.,replacing the loss of a major piece of equipment that was destroyed. Under present policy, items that were originally requested in the Regular Budget but cut from it cannot be included in the Supplemental Budget.

Insofar as the Regular Budget is concerned, the typical SUNY campus is actively involved with a single fiscal year's budget development/allocation/execution for a period spanning approximately 30 months (from the start of the budget request phase that occurs some twelve months prior to the start of a fiscal year to the formal closing of the state books which occurs 5 1/2 months after the end of a fiscal year - Illustration 1). Throughout this period, information that could be provided from statistical reports generated by the campus Institutional Researcher would probably lead to a more effective and efficient budget process. We maintain that all too often the role of the Institutional Researcher has tended to be minimized and largely overlooked in actual practice.

The remainder of this paper will describe the budget process at SUNY Brockport and what we feel can be the major contributions of the Institutional Researcher. Obviously, information is only as valuable as the degree to which it is properly utilized. The budget process has four basic phases:

1. Preliminary Request Phase - Shortly after the beginning of the fiscal year the College begins gathering information to formulate and justify its budget request for the following fiscal year. The Vice Presidents and Provost prepare requests for their areas of responsibility based on information they have pertaining to the projected budget needs of the individual departments. The Budget Office coordinates the area requests in compiling a total campus report within broad guidelines provided by SUNY Central Administration. (Phase I)
2. Final Request Phase - After SUNY Central examines the campus preliminary requests it issues revised guidelines to the campuses to allow for the preparation of a defensible, coherent university-wide budget request. In this phase the College revises the preliminary budget document to reflect university-wide concerns and also utilizes updated Institutional Research information (see Table 1) to further justify its request. (Phase II)
3. Budget Allocation Phase - This is perhaps the most difficult phase of the budget process. After the Governor releases his recommended state budget (Executive Budget) and while the New York State Legislature is debating its approval, the College begins the process of establishing

allocations for its individual departments. Each department submits its request, with full justification, to the appropriate Vice President or, in the case of the Academic area, to the Provost via the Academic Deans. (Phase III)

The Executive Budget recommends allocations to each SUNY Campus by major area of activity (i.e., Administration, Residence Halls, Libraries, Maintenance of Plant, etc.). The Academic area (Instruction and Departmental Research) is designated as a separate activity category. The Provost has the responsibility for making allocations to individual academic departments within the constraints of the total allocation established for the Instruction and Departmental Research activity area.

4. Budget Reallocation Phase - It has been the recent practice at the local level to conduct a mid-year review of departmental expenditures and budget needs that will recognize changing institutional needs. The major decision makers in this process are the Vice Presidents, Provost and Academic Deans, who must decide what reallocations they will internally impose within their areas of responsibility. Final approval of any and all reallocation plans rests with the campus president. (Phase IV)

In each of the four basic budget phases, accurate and current information is necessary if rational decisions are to be made by those responsible for requesting, allocating, and reallocating institutional funds. We believe that much of the necessary information is available via routine reports prepared by our Office of Analytic Studies.

These reports are prepared for various reasons. Some fulfill external requirements, e.g., from SUNY Central; others are responses to internal requests, e.g., from Administrative and Academic areas; and still others condense data obtained from computerized output derived from SUNY Central as well as locally. Table 1 - 1981 - '82 Fiscal Year, serves as a guideline for distribution of these reports to either the Budget Office (Controller) or the President, the Vice Presidents, or the Academic Areas (Provost, Deans, Unit Chairpersons). These reports are relevant and necessary to the budget process during the four distinct budgeting time periods (Phase I - IV). A brief description of each report follows:

Budget Office - Controller

1. Preliminary Enrollment Projections - Indicates the Fall Headcount by student level and by full-time/part-time status. This information is given for the following categories: (a) the Previous Year - Actual (Fall 1979); (b) the Base Year - Budgeted (Fall 1980); (c) the Base Year - Estimated Actual (Fall 1980); and (d) the Request Year - Initial Preliminary Budget Target (Fall 1981). Then the change between the Fall Base Year - Budgeted and the Request Year is computed. The Annualized Headcount Average is also projected for categories (a) - (d) (Fall 1981 - Spring 1982).
2. Preliminary Workload Projections - Indicates the Annual Average Full Time Equivalent Student by program and by level of instruction. This information is given for the same categories (a) - (d) listed above. The difference between the Base Year - Budgeted and the Request Year is also calculated.
3. Preliminary Summer Enrollments - Indicates the Summer Student Credit Hours and the summer enrollments for four categories: the Previous Year - Actual; the Base Year - Estimated Actual; and, the Request Year. Then, the change between the Base Year - Budgeted and the Request Year is calculated.
4. Semi-Final Enrollment Projections - Supplied upon request, indicates the same information given in categories (a) - (d) in the Preliminary

Enrollment Projections plus one additional category: the Request Year - Proposed/Corrected Preliminary Budget Target. The difference between the Base Year - Budgeted and the Request Year is modified accordingly.

5. Semi-Final F.T.E. Workload Projections - Supplied upon request. Indicates the same information given in the Preliminary Workload Projections for the four categories plus an additional category: the Request Year - Proposed/Corrected Preliminary Budget Target. The difference between the Base Year - Budgeted and the Request Year is modified accordingly.

6. Final Enrollment Projections - Indicates the same information as supplied in the Preliminary Enrollments for the following categories: (a) Previous Year - Actual (Fall); (b) Base Year - Budgeted (Fall); and (c) Request Year - Budgeted (Fall) which is revised as additional information warrants.

   The change from Base Year Budgeted is recalculated as necessary. The Annualized Headcount is also given for each of the three categories listed above. The difference is again computed between the Request Year and the Base Year Budgeted.

7. Final F.T.E. Workload Projections - Indicates the information as supplied in the Preliminary Workload reports for categories (a) - (c) listed in #6 above. The difference between the Request Year and the Base Year - Budgeted is determined.

8. Final Summer Enrollments - Indicates the student credit hours by level of instruction and unduplicated headcount enrollment by class level of student for: the Previous Year - Actual; the Base Year - Budgeted; and the Request Year - Budgeted. Then the change from the Base Year - Budgeted is computed.

9. Statistical Abstracts - Document produced by SUNY Central Institutional Research Office. Summary tables of selected statistics are presented

for intercampus comparison. These statistics are derived from the Course And Section Analysis (C.A.S.A.), in which 31 campuses participate. A primary consideration in the selection of statistics included in this publication is the ability to develop percentage data on instructional workload and cost of instruction. Stat Abstracts are produced annually for the Fall semester only. The six categories of reports included are: (a) Selected Cost Factors by Discipline; (b) Faculty and Student Contact Hours by Instruction Type; (c) Student Credit Hours; (d) Personnel Positions - Full Time Equivalents; (e) Percent F.T.E. Workload by Discipline and Course Level; and (f) Trends of Selected Indicators.

10. Trend Report - F.T.E. Faculty Applied to Teaching, Student/Faculty Ratios and F.T.E. Students - This report tabulates the above information by Department for four consecutive Fall terms. It is derived from C.A.S.A. and is useful in projecting future departmental needs.

11. F.T.E. Faculty Applied vs. Generated by Course Level Based on F.T.E. Students - This table divides the divisional levels of F.T.E. Students Generated by 20, 18, and 12 for lower, upper, and graduate, respectively, to estimate the number of F.T.E. Faculty Generated. Then the difference is calculated for each level and college totals are computed. This provides an accurate assessment of the F.T.E. Faculty required to handle the student F.T.E.s generated within each department.

12. F.T.E. Faculty Applied vs. Generated Based on Weekly Faculty Contact Hours (WFCOH) - The College WFCOH averages for lower, upper, and graduate course levels are used to divide the total WFCOH at each respective level to determine the departmental F.T.E. faculty generated. This table also lists the differences between the F.T.E. faculty applied and generated. The difference from the previous term is included

for comparative purposes. This provides additional qualitative data for decision-making; it illustrates programmatic differences.

13. Faculty Resource Distribution - Provides detailed breakdown of faculty resources according to type, i.e., Regular Faculty plus Teaching Assistants; Contributed Service, Temporary Service or Research Foundation; and minus F.T.E. Faculty Released for Non-Teaching Activities; Sabbaticals and leaves results in Total F.T.E. Faculty applied to teaching by department.
14. Salary Costs Per F.T.E. Student Generated - Calculates Total Cost/F.T.E. as well as cost/F.T.E. at the different course levels for each department.
15. Faculty Activity Analysis - Internal survey which provides costs for various faculty activities such as teaching, advising, administration, etc. It includes credit hours generated and cost per credit hour.
16. Number of Majors by Department - This table indicates the number of declared majors by student level for each department for a given semester.
17. Bachelors Degrees Granted by Major and College Totals - Reports number of Bachelor degress granted July 1 - June 30. Indicates number and percent of change from previous year.
18. Master Degrees Granted by Program and College Totals - Reports number of Masters degrees granted July 1 - June 30. Indicates number and percent of change from previous year.
19. Individual Faculty Analysis by Department - Historical data for each instructor charted for successive semesters. Information includes: Home Department, Student/Faculty Ratio, F.T.E. Faculty, F.T.E. Workload, Weekly Faculty Contact Hours, Student Credit Hours, and Course information for each course taught.

All of these reports can be utilized to substantiate various levels of support for departmental and institutional budget requests. It is the duty of the Institutional Researcher to make it known that this information is available. It is not sufficient to merely provide statistics. An explanation must be given as to the source of this information, how it was derived and its budget relevancy, e.g., orientation sessions for unit chairpersons, briefings for Provost and Deans, etc. We feel that it is also the responsibility of the Institutional Researcher to have a working knowledge of the budget process itself so that the potential usefulness of the various reports can be adequately explained. Thus, as the Institutional Research person becomes knowledgeable with the budget process, new reports can be developed.

ILLUSTRATION 1 - FISCAL YEAR 1981 - '82 30 MONTH BUDGET CYCLE

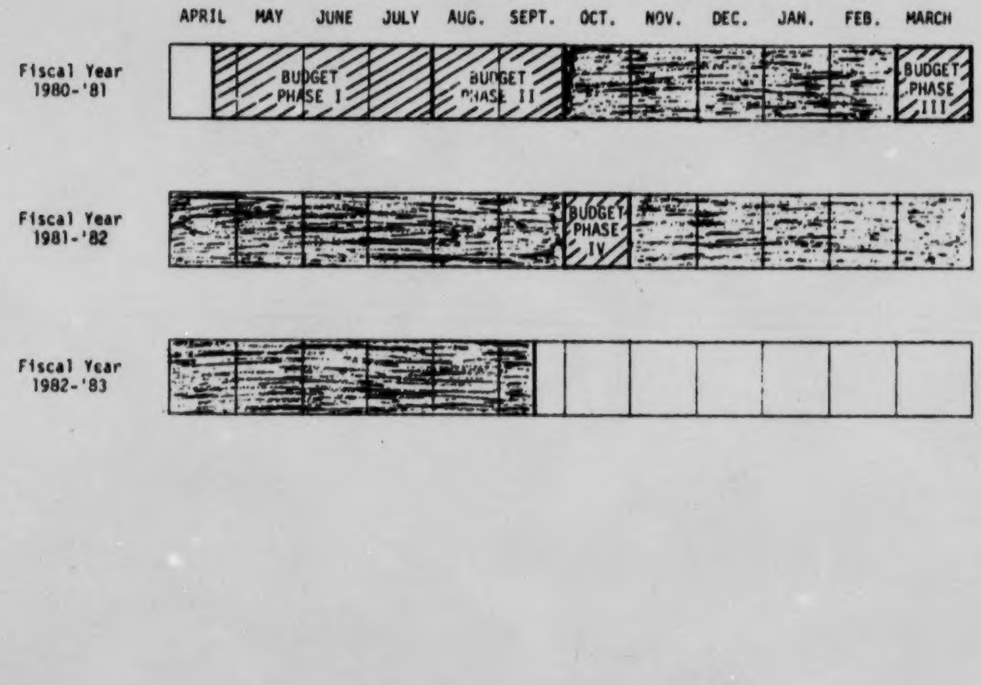

TABLE 1 - 1981 - '82 FISCAL YEAR

	BUDGET OFFICE (Controller)	PRESIDENT, VICE PRESIDENTS, ACADEMIC AREA
PHASE I Preliminary Budget Requests April-July 1980	1 Preliminary Enrollment Projections 2 Preliminary FTE Workload Projections 3 Preliminary Summer Enrollments	Final Fall '79 Data Included in Reports 9 Fall '79 Stat Abstracts 10 Trend Rpt. - FTE Faculty Applied, S/F Ratios, and FTE Students 11 FTE Faculty Applied vs. Generated by Course Level 12 FTE Faculty Applied vs. Generated by WFCOH 13 Faculty Resources Distribution 14 Salary Costs/FTE Students Generated 15 Faculty Activity Analysis Survey 16 Number of Majors by Dep't. and College Totals 17 BA Degrees Granted by Major and College Totals 18 MS Degrees Granted by Program and College Totals 19 Individual Faculty Analysis by Department
PHASE II Final Budget Requests August-September 1960	4 Semi-Final Enrollment Projections 5 Semi-Final FTE Workload Projections 6 Final Enrollment Projections 7 Final FTE Workload Projections 8 Final Summer Enrollment	Final Spring '80 Data Available to Update Reports Distributed in May-June
PHASE III Budget Allocations March 1981		Final Fall '80 Data Available to Update Reports Previously Distributed
PHASE IV Budget Reallocations October 1981	9 Fall '80 Stat Abstracts	Final Spring '81 Data Available to Update Reports Previously Distributed 9 Fall '80 Stat Abstracts 19 Individual Faculty Analysis by Department

A FINANCIAL FEASIBILITY MODEL FOR HIGHER EDUCATION

Paul Wing, Coordinator, Postsecondary Research
Glenwood L. Rowse, Associate in Higher Education
New York State Education Department

INTRODUCTION

How much money must be provided to higher eduction to enable it to operate effectively at a given enrollment level? Do factors other than enrollment cause this figure to change? The decline in college enrollments expected by 1990 can be expected to reduce institutional revenues coming from tuition and fees, state appropriations, Bundy Aid and other sources. It is not clear, however, whether revenues and expenditures can or should be reduced by an amount equal to the percentage decline in enrollments. Nor is it clear whether expected trends in revenues and expenditures will result in balanced accounts. Shifting of fixed state resources among various financing mechanisms can actually alter the total revenues available to institutions, because of linkages between tuition levels, student aid, and state appropriations. Examination of each of these questions should help to clarify difficult policy questions related to the enrollment declines expected in the 1980's and 1990's.

This paper describes a model for analyzing these kinds of questions and issues. Actually, the term 'model' may imply something more sophisticated that the procedures illustrated below. The variety of potential applications of the approach, however, seem to justify this label. Regardless of semantic concerns of this nature, the questions raised above are significant and the approach described below could be very useful in answering them. Illustrative applications are shown for a state agency and an individual institution.

STATE LEVEL SCENARIOS FOR 1990

Two scenarios for 1990 are presented below, each of which represents different assumptions about institutional costs and public attitudes about higher education. The first assumes no major changes in the nature of higher education and its funding. It does take into account the likely impact of smaller enrollments, the economic climate, and increasing energy costs. The other scenario begins with these considerations and adds assumptions related to a changing student clientele and public support for higher education. In both cases the estimated quantitative impact is tentative and open to discussion. Readers are encouraged to record their own estimates as they consider the possibilities.

The assumptions made for each scenario are summarized in Table 1. In all cases, constant (1978) dollar values are assumed. For example, the 60 percent increase in energy costs is a real increase, above and beyond inflation. Actually, it has been assumed that energy prices will increase by 75 percent above inflation but that conservation efforts will reduce consumption so that a 60 percent increase in costs will be experienced. The assumptions for the policy scenario are laid out in subsequent discussion.

The Baseline Scenario - - The Major Assumptions

The intent of the baseline scenario is to lay out major assumptions to create a starting point for discussion. These assumptions are neither totally realistic nor sufficient to describe the future. The other scenario attempts to resolve these problems by adding more realism to the situation. This step-wise approach permits us to see the specific effect of the individual assumptions and policies.

As a place to start, it is assumed that full-time equivalent enrollments will drop 18 percent by 1990. This is consistent with recent esti-

TABLE 1. SUMMARY OF ASSUMPTIONS FOR STATE LEVEL SCENARIOS FOR 1990*

	SCENARIO	
Changes in:	Baseline	Policy Options
Enrollments	-18%	-10%
Faculty Costs Related to Employee Numbers	-18	-4
Faculty Costs Related to Faculty Composition	0	4
State Funds for Education	0	-4
Energy Costs	60	60
Debt Service	-36	-36
Student Aid	-5	13
Clientele Shift	NO	YES

TABLE 2. SUMMARY OF ASSUMPTIONS FOR INSTITUTIONAL SCENARIOS FOR 1990*

	SCENARIO	
Changes in:	Baseline	Alternative A
Enrollments	-25%	-15%
Faculty Costs Related to Employee Numbers	-20	-10
Faculty Costs Related to Faculty Composition	0	+5
State Funds for Education	0	0
Energy Costs	+60	+60
Debt Service	-36	-36
Student Aid	0	+10
Clientele Shift	NO	YES

*Percentages are from 1978 levels and 1978 dollar values are assumed. Adjustments for inflation would need to be added on to determine actual 1990 dollar amounts.

mates by the New York State Education Department (Rowse, 1979). Inflation and the economic climate in the state will tend to limit public desire to allocate resources to higher education at present levels. In addition, energy prices are expected to increase in price by 75 percent and, as previously explained, a 60 percent increase in energy costs is assumed.

With these assumptions as the starting point, one must next assess the impact these changes will have on expenditures and revenues for higher education. This is done by applying the relevant change in Table 1 to the various revenue and expenditure categories in Table 3. To simplify calculations, it is assumed that enrollment levels are directly related to several of the revenue and expenditure categories. Revenues from state and local governments, tuition and fees, and auxiliary sales and expenditures for instruction, student services, scholarships and auxiliary enterprises are therefore expected to drop by the same 18 percent as are enrollments. As shown in Table 3, the 18 percent drop in state appropriations to institutions has been computed in terms of the total revenues available to institutions. For example, in 1978-79 it was estimated that 25 percent of total revenues came from state appropriations. An 18 percent drop in the appropriation results in a 4.5 percent drop in total revenues (25 x .18 = 4.5). Eighteen percent declines are similarly assumed for local revenues, tuition and fee revenues, and auxiliary sales revenues. Altogether, the enrollment drop could produce a 12.9 percent drop in revenues.

The decline in enrollment will also result in a reduction in expenditures for instruction and other activities. In this scenario, it is assumed that institutions will be able to reduce instruction by 18 percent which will lead to a 6.1 percent decline in total expenditures (34.1% x .18 = 6.1%). Comparable declines in expenditures for student services, scholarships, and auxiliary enterprises are also assumed.

TABLE 3

TWO SCENARIOS OF COLLEGES AND UNIVERSITIES REVENUES AND EXPENDITURES IN NEW YORK STATE IN 1990

	Estimated 1978-79	Change by 1990*	
REVENUES (1978-79 basis)	Conditions	Baseline	Policy Options
Federal	12%	0%	0%
State	25	-4.5	-6.3
Local	8	-1.4	-1.4
Private Gifts	6	0	0
Tuition and Fees	31	-5.6	-1.7
Endowment Income	3	0	0
Auxiliary Sales	8	-1.4	-0.8
Hospital Sales	6	0	0
Other	3	0	0
TOTAL REVENUES	100%	-12.9%	-10.2%
STATE AID TO STUDENTS	5.8%	-1.0%	+2.6%
EXPENDITURES (1976-1977)			
Instruction	34.1%	-6.1%	+0.7%
Research	7.8	0	0
Public Service	2.9	0	0
Student Services	3.9	-0.7	+2.1
Academic Support	4.8	-0.4	-0.4
Institutional Support	10.7	-0.9	-0.2
Plant Operation & Maintenance	8.7	+5.2	+5.2
Transfers (Debt)	7.1	-2.6	-2.6
Scholarships	4.8	-0.9	-0.9
Auxiliary	7.7	-1.4	-0.8
Hospitals	6.8	0	0
Independent	0.5	0	0
TOTAL EXPENDITURES	100%	-7.9%	+3.1%
BALANCE	0%	-5.0%	-13.3%

*Changes are based on application of relevant major changes to the Baseline percentages. Zero entries mean no change assumed in that item.

Expenditures on academic and institutional support are also enrollment driven, but an eight percent drop rather than 18 percent is assumed for these categories to account for expected increases in recruiting and planning activities. This brings expenditures down another 1.3 percent.

The expenditure picture is not complete until transfers (debt service) and plant operation and maintenance have been taken into account. While new construction will certainly be limited between now and 1990, existing obligations (principal and interest) ensure that debt service or mandatory transfer costs in 1990 will be at least as large in dollar amounts as they were in 1979.

However, if inflation continues, these obligations will be paid off in dollars of reduced value. Assuming a 7 percent inflation rate through 1990, the cumulative inflation factor would be 110 percent. Given no new debts, this would effectively represent a 52 percent drop in debt service (110/210). One may also assume that some new debt service will be necessary, particularly major renovation of buildings over a period. For this analysis a 16 percent upward adjustment is made so that, in total, debt service will decrease by 36 percent (52 - 16 = 36) or by approximately 2.6 percent of total expenditures (7.1% x .36 = 2.6%).

There is one expenditure item which is likely to increase dramatically in terms of constant dollars. Even after all possible conservation measures have been taken, energy costs are likely to increase significantly. In this example, this is reflected in a 60 percent increase in plant maintenance and operations costs which represent 5.2 percent of total expenditures (8.7% x 60 = 5.2%). The impact of rising energy costs is, of course, very uncertain and the actual figures could be considerably higher or possibly lower (Landsberg et. al., 1979).

For this baseline scenario no changes have been assumed for any other revenue or expenditure category. The net effect of the assumptions is that by 1990, in contrast to the current situation of essentially balanced expenditures and revenues, expenditures may decline far less than revenues. In fact, the deficit would be on the order of 5.0 percent of $4.5 billion or over $255 million.

This example does not explicitly identify state-financed student aid programs. Other things being equal, expenditures for these programs would decline by 18 percent of total higher education revenues. This does not directly affect the institutions, but it does suggest the possibility of the state allocating that one percent back to the institutions either through an increase in the TAP schedule or through some other mechanism. If this were done and if the State were similarly to reallocate the 4.5 percent reduction in State appropriation back to the institutions, the books could be kept in balance. This simplified illustration, therefore, suggests that if the state were to maintain its current level of support for higher education (with appropriate adjustments for inflation), then expenditures and revenues for higher education could be kept in balance.

Policy Options Scenario

In this scenario the basic assumptions of declining enrollment and rising energy costs are maintained. However, other factors and policy options are taken into account. Scarcer state resources, changing student clientele, and a higher percentage of tenured faculty are expected to have an impact. Three possible alterations in the provision of services that could have a significant impact on the revenues and expenditures picture are evaluated: first, activites to attract more students; second, maintenance of faculty numbers to support the economies of local communities and offer the increased service and quality; and third, in order to achieve all of these ends and for many institutions to survive, an increase in tuition charges, especially for independent institutions.

A larger proportion of the students in 1990 is expected to be from low income groups. This shift is expected due both to relatively higher birth rates among low income groups during the late 1960's and the 1970's and to continued outmigration from the State of the more educated and wealthy population groups. For this example, it is assumed that the number of aid-eligible students will remain constant and that more of them will be under-prepared academically and in need of support beyond just tuition aid. Thus, rather than a drop in the support of aid programs as suggested in the baseline case, an increase will be required to maintain participation rates at projected levels. In this case, a 20 percent increase ($52 million) in the State support for student aid or 1.2 percent of total revenues is assumed.

Another assumption is that the state will allocate less resources to higher education as part of an attempt to reduce overall State expenditures. A 4 percent drop is assumed. It is further assumed that aid to students is considered a priority and consequently that this money would be taken from the institutional appropriation, reducing total revenues to 6.9 percent below current funding.

A five percent increase in tuition revenues is assumed (after adjustment for inflation) from the increase in tuition charges. This will increase total revenues by 1.5 percent. This combined with the policy options related to attracting more students and increasing service and quality are estimated to have a net impact of reducing the enrollment decline by 1990 to 10 percent rather than 18 percent. This would increase tuition revenues by

8 percent resulting in another 2.4 percent increase in total revenues (31% x .08 = 2.4%). Tuition revenues would now be expected to drop by only 1.7 percent of total revenues, while auxiliary sales would increase by another 0.6 percent of total revenues (8% x .08). However, it is further assumed that additional student aid for part-time and disadvantaged students would also be necessary to attract the students. In this case, $30 million for part-time tuition assistance and another $30 million for aid to disadvantaged students is assumed. Student aid would then increase by another 1.4 percent of total expenditures and the State appropriation would have to decrease by 1.4 percent of total revenues as an offset. It seems doubtful that faculty size can be maintained in the face of a significant enrollment decline. A 4 percent reduction is assumed for this scenario. In addition, higher faculty costs related to tenure and other program increases are expected to contribute to an overall increase in instructional costs of over 2 percent (after inflation) or almost 0.7 percent of total revenues. The additional services of the newly attracted students would require another 12 percent increase in student services, which results in a overall increase of 2.1 percent of expenditures. Auxiliary services may become slightly more expensive with the increase in students and because of diseconomies of scale not previously considered. An 8 percent increase in costs would result in a net increase of 0.6 percent of total expenditures (-1.4 + 0.6 = -0.8 overall). No changes are assumed for the other expenditure categories.

The net result of all these assumptions is a ten percent drop in enrollments, a 13 percent increase in student aid, a 10.2 percent drop in total revenues and a 3.1 percent increase in total expenditures. This translates into a 13.3 percent overall deficit, which is greater than occurred with the full 18 percent decline in enrollment. The lesson here is that, if attracting more students requires more student aid and services, then the cost increase may be greater than the revenue generated. While institutions and students would benefit, the State would likely have to shoulder extra costs.

CAMPUS LEVEL ILLUSTRATION

This section of the paper illustrates the use of this approach for a small four-year independent liberal arts college. Table 2 lays out the major change variables for 1990 under two sets of assumptions and Table 4 applies these change factors to the current distribution of revenues and expenditures for the institution.

The Baseline Case

It is assumed that this institution will experience a 25 percent decline in enrollment, perhaps a little less than the average expected for this type. Faculty costs are expected to decline by 20 percent, reflecting some enrichment related to maintenance of curriculum options. As in the state level illustrations a 60 percent increase is expected from energy costs along with a 36 percent decrease in debt service.

The impact of these changes is shown in Table 4. Overall, revenues are expected to drop by more than 20 percent, primarily as a result of lost tuition revenues (-25% x 60% = -15%). On the expenditure side instruction decreases 5.6% (28% x 20%). Student services, academic support, and administration are assumed not to decrease in proportion to enrollment in order to maintain critical services for students and the institutions. Energy costs increase by 60 percent while scholarships and auxiliary services decline by 25 percent.

The net result of this scenario is a 9.2 percent shortfall in revenues. In order to balance the books this must be made up by an increase in revenue

TABLE 4

TWO SCENARIOS REVENUES AND EXPENDITURES FOR A HYPOTHETICAL 4-YEAR INDEPENDENT INSTITUTIONS IN 1990

		Change by 1990*	
REVENUES	Current Conditions	Baseline	Alternative A
Federal	6%	0%	0%
State	5	-1.3	-0.7
Local	0	-0	0
Private Gifts	10	0	0
Tuition and Fees	60	-15.0	-9.0
Endowment Income	1	0	0
Auxiliary Sales	16	-4.0	-2.3
Other	2	0	0
TOTAL REVENUES	100%	-20.3%	-12.0%
EXPENDITURES			
Instruction	28%	-5.6%	-2.8%
Research	0	0	0
Public Service	1	0	0
Student Services	7	-1.0	0
Academic Support	7	-1.0	-0
Institutional Support	18	-2.0	-1.0
Plant Operation & Maintenance	10	+6.0	+6.0
Transfers (Debt)	3	-1.0	-1.0
Scholarships	12	-3.0	-0.6
Auxiliary	14	-3.5	-2.0
TOTAL EXPENDITURES	100%	-11.1%	1.4%
BALANCE	0%	-9.2%	-10.6%

*Changes are based on application of relevant major changes to the Baseline percentages. Zero entries mean no change assumed in that item.

or a decrease in expenditures. If the college were to make up the difference through tuition, a 15.3 percent increase after inflation would be required (9.2 - 60 = 15.3).

Alternative A

Alternative A assumes a successful adaptation to the situation in the 80's. The enrollment decline is reduced to 15 percent through a series of activities involving more student aid, enrichment of student services and academic support, and enhancement of the dorms. Without belaboring the specific calculations, the net impact of this scenario is a 10.6 percent shortfall, even worse than in the baseline. This illustration makes a significant point that success in the 80's can bring significant fiscal problems.

CONCLUSIONS

The examples above illustrate one approach to long-range fiscal planning that can be useful in developing plans for the future of higher education. The assumptions and estimates are crude, but they reflect real possibilities.

The approach has the advantage that it involves only simple calculations and can therefore be used in situations where limited technical capabilities exist. One can also envision rather elaborate extensions of the approach to simulate the potential impacts of a wide variety of alternative futures.

Ultimately, if this type of analysis were used by planners, it could be extended to consider differential impacts on different sectors and types of institutions. The dependence of different groups of institutions on student-driven or state revenues may lead to significantly different outcomes for different sectors. In the long run, this could affect the choice of specific policies, programs and financing mechanisms. The analysis could also be extended to deal with the impact of shifts in federal, local and private support of institutions and student aid, and the cost implications of, for instance, increasing student consumerism, legal or court resolution of conflict, data compliance requirements and State regulations.

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AUTOMATING THE FACTBOOK TO CREATE AN ON-LINE, PLANNING DATABASE

Michael E. Baker
Director of University Planning

Carnegie-Mellon University

Introduction

In the past, Institutional Researchers have focused on computers as a tool for data retrieval and summarization. In the future, computers will play a greater role as a planning tool. This paper reviews a project that automated a major research university's "fact book" to create an on-line, planning database, which could be used by top level administrators. This review includes discussions of both trade-offs made in designing the planning database and of the features of the particular model used. The database contains information on students, faculty, and instructional and research activity for each academic department for several years. This information can be used to generate reports, plots, forecasts, and statistical analyses for planning purposes.

Interest in On-line Database

Many planning studies, or requests for information, focus on the data contained in a university fact book or financial statements. This data includes enrollments, faculty, units taught, budgets and expenditures, and assigned space. Problems occur in preparing this information for reports. It is time-consuming to reformat the data from the fact book, and requests usually dictate the calculation of ratios and a restatement of the data in a particular way. This type of situation makes an on-line database desirable, as reports could be generated efficiently and with great flexibility. The next section of this paper discusses the specific capabilities required for an on-line planning database.

Database Capabilities

Experience at Carnegie-Mellon University (CMU) suggested the importance of the following capabilities for an on-line database:

- File input/output
- Data "browsing"
- Report writing
- Statistical analysis (general analysis and multiple regression)
- Plotting
- Programming (set-up required, flexibility, and ease of use)

The need for these capabilities will not be documented here, but they should be familiar to anyone with institutional research experience. Given a description of the general capabilities required, the next task was to choose a specific on-line system.

Planning Database System Selection

The capabilities required for a planning database, as outlined above, rule out the use of a general programming language like FORTRAN, BASIC, or APL. Instead, a packaged higher level system must be used. The following systems were considered for use for the planning database at CMU: DBMS/IQL, EMPATH, ZOG, EMPIRE, EFPM, MINITAB, DAP, and SPSS. Each of these systems will be described in turn.

DBMS is a database management system in DEC 20's.[1] IQL is an information query language developed for use on DEC equipment from the Query 5 language used on IBM machines.[2] EMPATH is a language developed at CMU, which focuses on the ability to create logical connections among data elements without the user being aware of the physical connections.[3] ZOG is a data browsing language, developed at CMU.[4] EMPIRE is a modelling, reporting, and analysis system, developed by Applied Data Research, Inc.[5] EFPM is a modelling language developed by EDUCOM from Stanford's TRADES models.[6] MINITAB is a commonly-used, statistical analysis package.[7] DAP is a Data Analysis Package, developed at CMU, which drew partially upon the TROLL system at Cornell.[8] DAP was built to facilitate exploratory data analysis.[9] SPSS is the widely-used Statistical Package for the Social Sciences.[10] These packages are not an exhaustive list of those available, but they are representative of the kinds of packages that exist.

The packages were grouped for comparison into three categories based on their general capabilities. The groupings were: Data Management (DBMS/IQL, EMPATH, ZOG), Forecasting (EMPIRE, EFPM) and Analytical (MINITAB, DAP, SPSS). The packages were then evaluated by the author on each of the capabilities required. A portion of these subjective ratings is shown in Table 1. These ratings show that, in general, the forecasting packages, EFPM and EMPIRE, did the best overall job of meeting the capabilities required. This versatility is important. Although a more ideal system could be developed by using the best features of each package, there are advantages to having a single package; the main advantage being ease of use. A single package eliminates the need to spend time doing file input and output from one system to another.

Table 1. System Comparison (Condensed)

	System		
Selected Requirements	DBMS	EMPIRE	SPSS
Data "browsing"	Retrieval Only	Yes	Report Only
Statistical Analysis	No	Yes	Yes
Plotting	No	Flexible	Limited

The EMPIRE system was chosen for CMU's planning database trial. The next section of this paper will outline the construction and use of this database.

Planning Database Construction and Usage

The first question, in developing the planning database test, was what data to use. CMU's College of Humanities and Social Sciences was chosen for a prototype, because its mix of departments represented a microcosm of the university. The data chosen were those items that have been used frequently for planning activities, which came readily from CMU's Statistical Handbook and Financial Statements. The data were: units taught, square feet of assigned space, E & GO budget and expenditures, restricted expenditures, research direct expenditures, research overhead recovery, undergraduate and special FTE enrollment, graduate FTE enrollment, on-campus faculty, tenure stream faculty, and tenured faculty. The data were organized by department, by fiscal year. The departments included English, History, Modern Languages, Psychology, Social Sciences, and the Dean's Office. The Dean's Office was used to compile both the activities of the Dean's Office and special centers in the college, and to receive the assignment of interdisciplinary course units taught and non-departmental major students.

The next step was to structure the data in an EMPIRE model. This presented a challenge to the author. The challenge arose because EMPIRE is structured in two dimensions (variables versus time), while the planning database had three dimensions (variables by department versus time). EMPIRE permits two ways of handling this problem. One way is to have a separate dataset for each department that is organized by variables versus time. Reports for an entire college could then be produced by using EMPIRE's consolidation feature, which aggregates information across smaller units. The problem with this method is that cross-sectional data analysis cannot be performed without data manipulation. For example, a regression relating faculty members to credit units taught could not be performed since each "observation" would be in a separate departmental model and, therefore, not accessible at one time without data output into another file for the analysis. The second way is to use one dimension for two factors, such as variables by department versus time, or variables versus department by time. The author chose the latter structure (variables by department versus time). This structure was chosen to permit cross-sectional data analysis and to permit a more compact model than the variables by department versus time structure.

The disadvantage of the structure chosen is that many "IF" or "SELECT" statements are required to perform computations for a specific department (such as indexing several variables over a five-year period to the first year values) or to perform computations for a specific year. The trade-off between the two methods is, therefore, ease of modelling and computing, versus ease of having the data in one database. The author preferred the single database structure; but, others may have different preferences.

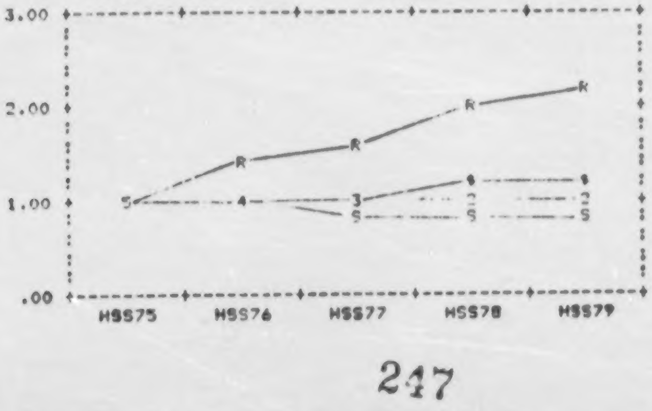
The prototype model for the Humanities and Social Sciences college has been expanded to a model for the whole University. The model has been set up in three formats for ease of use. The "standard" model allots ten columns for each department: five for historical data and five for forecasting. A "compact" model uses five columns of historical data per department, and is used for most reporting and data retrieval. A "fiscal year" model includes only one year of data for each department, and is used for reports on a single year's activity, or cross-sectional data analysis.

Model Features

One of the most important features required for the automated planning database was the ability to generate reports. This can be done in two ways. First, an on-line "PRINT" command can be given that produces a listing of the current variables. The columns and variables selected, column width, and number of decimals are among the factors that can be easily specified. Second, reports can be generated from a report control file. Either method is capable of producing a report to the user's specifications.

Statistical analysis is also possible using EMPIRE. A simple model that could be used for a regression is: the number of faculty in a department is a function of thousands of credit units taught and thousands of dollars of research and restricted expenditures. The one problem with the database structure is that this regression will be both cross-sectional and longitudinal, as the columns in the database represent departments and fiscal years. A cross-sectional regression analysis for a single year would require a prior 'SELECT' statement to specify the proper columns, or use of the "fiscal year" model.

The final application area of importance is that of data plots. Fig. 1 shows a plot produced by indexing several key variables to fiscal year 1974-75. The resulting plot for this department shows, in part, increasing research and restricted expenditures, with decreasing enrollments and a constant number of faculty. It would be quite easy to use EMPIRE to deflate expenditures, while creating the indexed variable. This kind of departmental profile is frequently used in planning discussions about academic departments. Again, the structure of the database creates some difficulty in setting up the indexed variables. As the model is structured, a series of 'IF' statements and computational statements must be used for each department. If the database were structured for single departments, then only one set of statements would be required.


Indexed Items for H&SS College, 1979
$=Indexed E&GO; R=Indexed Non-E&GO (Research & Restricted); U= Indexed Units;
F=Indexed Faculty; S=Indexed Enrollment

Planning Database Summary

EMPIRE provides a means of automating the functions required for using a planning database. Relatively straightforward commands will produce reports, statistical analysis, and data plots. These features cover the important uses of a planning database for conveying information to managers and policy-makers. As mentioned previously, there was a trade-off made in structuring the database on EMPIRE. The author used one structure because of a desire to be able to perform cross-sectional statistical analyses and to be able to perform all the functions required of the database, using one computer package without multiple data files. Others with different priorities might structure the model differently.

Mention should be made of an issue not addressed in the previous sections of this paper: the level of aggregation of the data. For example, this model, developed at Carnegie-Mellon University, broke down credit units taught to undergraduates and units taught to graduates, while tenure stream faculty were not broken down by rank. So although EMPIRE does permit easy aggregation of the data, or changes to the input file, some thought should be given to the appropriate level of data aggregation prior to implementing the planning database.

On the whole, the planning database, developed at Carnegie-Mellon, can be characterized as a successful use of technology to improve the communication of planning information. A more thorough analysis will be possible after this model has been used for a year for specific data requests.

Conclusions

Two conclusions can be drawn from this review of a computer-based planning model application. First, this application appears to be worthwhile, both in terms of automating tasks formerly done by hand or with desk calculators, and of providing features that could not be done without using a computer. Second, the specific design of an on-line planning database depends upon the particular skills and interests of the user. The author has summarized his experiences in order to help other users identify the choices that would be best for their situation.

FOOTNOTES

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SELF-HELP FINANCIAL AID: A STUDY OF ITS ROLE IN FINANCING HIGHER EDUCATION

Beverly A. Joyce
Research Associate
Boston College

Elizabeth M. Haran
Senior Research Associate
Public Affairs Research Institute

John P. Joyce
Director of Financial Aid
Lesley College

For the past twenty-plus years, student financial aid programs have developed in an effort to meet the difference between the cost of post-secondary education and an individual's ability to contribute toward those costs. Since the passage of the National Defense Education Act of 1958, the federal government has been involved in a partnership with states, schools, students and families to the point where "about half of all students--and three-quarters of students from low-income families--receive one or more forms of financial aid" (El-Khawas, 1979, p. 5).

The increasing costs of higher education coupled with expanding enrollment of students from low to moderate income families, have resulted in a rapidly widening gap between student resources and college expenses. To bridge this gap a growing percentage of college students are receiving some form of financial aid. It is estimated that over $12 billion in financial aid is available this year to help students meet the costs of education or training beyond high school.

Traditionally, financial aid has been categorized as "gift aid" (scholarships and grants) and "self-help" (loans and employment). Much of the recent growth in student financial aid has been in the area of "gift aid." This development can be attributed to the passage of the Middle Income

Student Assistance Act (Puma, et al, 1980) and the development of the Basic Educational Opportunity Grant Program (Fadil & Balz, 1980). However, given the grim economic climate and the demand for governmental fiscal restraint, the current trend in federal support of student financial aid is toward increased reliance upon "self-help" programs. As tuitions grow and "gift aid" levels, "self-help" aid will become increasingly important in meeting costs. Given the limited amount of money that can be earned via part-time employment, loans will be of particular importance.

Therefore, with the escalating costs, the growing proportion of needy students and the developing emphasis on self-help forms of financial assistance, this study is intended to provide an examination of the means by which students are financing their education. As noted in previous studies (Collins, et al, 1979), a variety of aid strategies and combinations are involved. It was our intention to study students' attitudes toward "self-help" programs, taking into account student characteristics and institution type.

METHODOLOGY

The data for this study were collected by questionnaire in 1979. The population of Massachusetts colleges and universities was stratified by type (public versus independent; two-year versus four-year). Within these strata, fourteen representative institutions were randomly selected. Thirteen colleges and universities actually comprised the final sample. Fourteen hundred questionnaires were distributed to students attending these institutions. The 755 completed questionnaires which were analyzed represent a 54% response rate.

Among other data, the questionnaires provided information regarding student demographics, methods of financing education and attitudes regarding self-help forms of financial aid. Frequency distributions were used to summarize the responses of the group as a whole. Chi-square analyses were computed to examine differences by type of institution, residence status and sex.

RESULTS

Initially, the data regarding financing education were examined for all respondents. As summarized in Table I, when asked about their methods of meeting their educational costs, 63% of the respondents reported that they were receiving money from their families and/or using their personal savings to finance a portion of their education. In terms of gift aid, 43% of the respondents indicated that they were recipients of scholarships and/or grants.

When examining self-help aid, 50% of the respondents reported that they were working to help meet college costs. The percentage of respondents indicating that they were loan recipients seems somewhat low (30%). This may be due to students considering all educational loans to be the responsibility of their parents. Therefore, a portion of those respondents who reported receiving "money from their parents" may actually be miscategorizing loan monies.

When analyzed by type of instituion, statistically significant differences were found for each type of financial assistance. That is, students at independent institutions were more likely to receive money from their families and/or use their personal savings ($p < .01$). They were also more likely to use gift aid and loans to finance their education ($p < .01$). In contrast, the respondents attending state-supported schools more frequently reported employment as their means of meeting college expenses ($p < .01$).

TABLE I

Sources of Financial Aid by Student Characteristics

		Type of Institution		Sex		Residence Status	
	All Respondents	Independent	State Supported	Male	Female	Resident	Commuter
Family Money/ Personal Savings	63%	71%	56%	58%	67%	75%	48%
Gift Aid	43%	47%	39%	36%	49%	45%	39%
Employment	50%	41%	56%	52%	49%	42%	57%
Loans	30%	42%	19%	24%	33%	40%	20%

Statistically significant differences were also found when the sources of financial assistance were analyzed by sex. Women were more likely to report receiving money from their families ($p < .01$). They also indicated more often than men that they were the recipients of gift aid and educational loans ($p < .01$). However, no significant difference was found when employment was analyzed by sex. That is, approximately 50% of both men and women reported using employment as a source of financial assistance. It is interesting to note that a difference by sex does emerge when examined by type of employment. Females reported more frequently that they participated in the College Work-Study Program (CWSP). Alternatively, males were reportedly more often employed in off-campus, non-CWSP jobs.

When the forms of financial assistance were analyzed by respondent residence status, statistically significant differences were found. Resident respondents were more likely to report receiving money from their families ($p < .01$). In addition, resident students more frequently reported that they were recipients of gift aid and educational loans ($p < .01$). Commuters, however, were more likely to report employment as their source of financial assistance ($p < .01$).

Overall, when focusing on self-help aid, there seems to be a difference by institutional type, sex and residence status when analyzing loans as a source of financial assistance. When analyzing employment, statistical differences emerge by type of institution and residence status.

Table II summarizes the data regarding the respondents' preferences with respect to self-help forms of financial aid. With the exclusion of males who are nearly evenly split in their preference, the respondents generally prefer employment as opposed to loans. This preference remains relatively stable across student characteristics.

TABLE II

Self-Help Aid Preference By Student Characteristics

		Type of Institution		Sex		Residence Status	
	All Respondents	Independent	State Supported	Male	Female	Resident	Commuter
Loans	40%	40%	40%	52%	31%	38%	41%
Employment	60%	60%	60%	48%	69%	62%	58%
	100%	100%	100%	100%	100%	100%	100%

Overall, respondents explained their preference for employment because it incurred no post-graduation debt and it also provided valuable work experience. In addition, respondents' comments indicate that they are generally poorly informed regarding the details of loans and loan agreements. This lack of information was evident pertaining to such specifics as interest rates, principal owed and repayment schedules.

IMPLICATIONS

It is apparent that difficulties exist in terms of students' perceptions relative to student loans as a form of financial aid. Scholarships and grants, since they are gifts, are clearly understood by students and always welcomed. Employment, while avoided by some, is not particularly confusing. Students generally view it as a source of income, an opportunity for career-related experience. There appears to be some confusion as to the primary responsibility and repayment implications of student borrowing. In general, the financial aid "system" assumes that there exists a shared responsibility, between student and parent(s), in financing an education beyond high school. While a loan involves a student's contract with the bank, the application often involves a parent's contact with the banker. As a result, the line between parental support and student borrowing may become blurred. This line may become more clearly defined as a formal parental loan plan is implemented (Hook, 1980, p. 14), but "the effect loans have on students and their decisions regarding marriage, family, and careers should receive careful study" (Hood & Maplethorpe, 1980, p. 67).

It is not surprising to note that students attending state schools report employment as their means of meeting college expenses while their counterparts at independent colleges rely upon a wider range/combination of aid. The higher direct costs (tuition and fees) at non-public institutions require up-front funding, to meet the major portion of student expenses, while subsidized tuitions at state-supported schools enable students to earn-while-they-learn to meet non-direct costs (living expenses, etc.). Clearly, the financial aid equation (Total Cost - Personal/Family Resource = Need/Eligibility) in general would shift more aid to the student attending the higher cost school.

While additional and more specific research is needed to explain why female students are more likely to report receiving gift aid and loans, it is clear that student employment is an attractive alternative to all students. According to this study, however, differences do exist in terms of type of employment, between male and female students. In general, males reported involvement in off-campus jobs not controlled by the institution while female respondents tended to be employed on-campus under the need-based College Work-Study Program (CWSP). This difference might be explained by comparing wage rates; while CWSP employment frequently offers convenient and career-related experience, off-campus jobs may offer more lucrative opportunities (Brunner, 1976, p. 44). If the CWS Program receives appropriations and regulations which have been authorized as part of the recently amended Higher Education Act (Hook, 1980, p. 14), on-campus/off-campus preferences reflected here may be modified.

In addition to reporting a higher level of reliance upon "gift aid" and family support, resident students tended to elect loans as their form of self-help aid while commuters were more likely to work. These findings support previous studies (Collins, et al, 1979) which examined how different types of students attempted to meet educational costs.

With the exception of males who show no strong preference for a particular form of "self-help" aid, this study reflects a general preference for employment over loans. Despite respondents' enthusiasm for work as the preferred form of self-help aid, the escalating costs of tuition, room and board cannot be met in full by part-time employment. Yet the general negative tone regarding loans suggest that many students are reluctant to use loans to finance their education. In addition, most students are basing their opinions regarding loans on little or no information.

The findings of the present study indicate directions for future work in two general categories: (1) consumer education for students and parents, and (2) financial aid research as an institutional priority. While developing regulations will emphasize and reinforce the need for "lenders to provide students with complete loan information, including the terms of repayment and the effect of borrowing on their eligibility for other student aid" (Hook, 1980, p. 14), there is a growing need to reach prospective students and their families with basic information on the intent and content of student financial aid programs. Until and unless there is developed an understanding of financial aid in general and "self-help" in particular colleges will face problems with student enrollment and persistence. At the same time, research needs to be done to examine more closely the impact and implications of financial aid within individual institutions. The evaluation and coordination of financial aid must become an institutional priority rather than a departmental responsibility (El-Khawas, 1980, p. 7).

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THE NON-TRADITIONAL STUDENT AND THE STATE UNIVERSITY COLLEGES

MARKET OR MYTH

by

Louis M. Spiro and Roberta Allis
State University of New York at Brockport

Purpose

We are entering an era in which there has been a predicted decline in enrollment of the first-time, full-time freshman. One new emphasis is the recruitment of the non-traditional student. In a state as populous as New York, the potentials of this market are tremendous, but what are the prospects for the State University Colleges in attracting these prospective students? Particularly, what are Brockport's prospects?

This paper takes a detailed look at the geographical market potential for the non-traditional student and the State University Colleges. If there is to be any enrollment planning at the individual campuses or for the system as a whole, it is necessary to investigate regional prospects that include target populations, age distributions, occupational categories and institutional competition.

Methodology

For each campus, a primary service area (P) of 15 miles and a secondary service area (S) of 30 miles are examined. These are arbitrary distances which represent realistic estimates of the willingness to travel for educational purposes. For example, in Figure 1, the solid lines represent the boundaries of the campus primary service areas and the broken lines represent the boundaries of the campus secondary service areas. Within these service areas, a list of cities and towns serves as a key for data collection.

After the service areas were established, it was decided to exclude Old Westbury from any further analysis. Its location within the New York City Metropolitan Area guarantees an enormous market in which to operate. Since this paper does not specify market tactics or strategies, any further work would merely confirm the intuitively obvious.

With the use of these primary and secondary service areas, we examine in detail some possible segmentations of the market for non-traditional students, defined as individuals between 25 and 64 years of age. The major data sources used are population figures, demographic and occupational categories (U.S. Bureau of the Census, 1970). The number and size of competitive institutions (State Education Department, 1980) has also been included.

State University College Market Descriptions

The Brockport Service Area is examined in detail and with accompanying tables. The other service areas are summarized in capsule form.

Brockport Service Area

The Brockport service area includes all of Genesee, Monroe and Orleans counties, and parts of Livingston, Niagara, Ontario, Wayne and Wyoming counties. The typical city size (see Table 1) is small, fewer than 2,500 people (P - 39%, S - 47%). However, there are several large cities, between 10,000 and 25,000 (P - 19%, S - 10%) and three cities with over 50,000 people.

Total employment is 81,049 in the primary service area and 142,828 in the secondary service area (see Table 2). The greatest percentage of people are employed in the Professional and Technical fields (P - 21%, S - 21%); as Craftsmen and Foremen (P - 15%, S - 14%); and as Managers and Administrators (P - 14%, S - 14%).

Industrial size is typically small (see Table 3) with the greatest percentage employing between one and twenty-five persons (P - 57%, S - 41%). A fairly significant percentage employs between 100 and 5,000 workers

(P - 19%, S - 22%), and 8 companies employ more than 5,000 workers.

Educational levels (see Table 4) are relatively high, in terms of high school completion (P - 59%, S - 78%); college attendance (P - 12%, S - 18%); and college completion (P - 12%, S - 28%).

And of the total non-traditional population (see Table 5) (P - 170,747, S - 111,747) 25 to 34 and 35 to 44 are the largest respective age groups (P - 30%, S - 28%).

Competition from the private sector is typically from small Rochester colleges located in the primary service area (see Table 6). Public competition is represented by the State University College at Geneseo. Figure 1 illustrates the extensive overlap of the Brockport and Geneseo service areas, a phenonmenon that does not occur for any of the other State University Colleges.

The general description is that this is a heavily populated service area with high employment levels. High educational levels, relatively young groups and highly skilled and professional workers provide high potentials for marketing non-traditional student programs.

Buffalo Service Area

This urbanized area includes parts of Chautauqua, Erie and Niagara counties. It has a predominance of middle-sized towns between 2,501 and 25,000 people (P - 60%, S - 81%), but also several large cities with over 50,000 people. Total employment is 563,439 in the primary and 33,654 in the secondary service area. It is concentrated in the Operatives and Transport Equipment Operative fields (P - 33%, S - 24%) and in Clerical fields (P - 12%, S - 15%). Industrial size is typically in the 26-50 employee range (P - 43%, S - 33%), but 10 companies employ more than 5,000 people. College attendance levels are fairly low (P - 5%, S - 11%) and completion of four years slightly lower (P - 5%, S - 10%). Out of the total non-traditional population

(P - 291,118, S - 20,519), 45 to 54 is the largest age group (P - 28%, S - 28%). Private college competition is mostly from small colleges within the primary service area, and public competition is represented by the University Center in Buffalo. Population size and location of the campus should provide extensive opportunities for non-traditional student recruitment.

Cortland Service Area

This basically rural area includes all of Cortland and Tompkins counties, and parts of Broome, Cayuga, Chenango, Madison, Onandaga and Tioga counties. It has primarily small towns (P - 68%, S - 66%) with fewer than 2,500 people and only one city with more than 50,000. Total employment is 14,065 in the primary and 169,965 in the secondary service area. It is typically concentrated in Operative and Professional and Technical fields in the primary service area (23% and 19%, respectively), and in Professional and Technical and Service fields in the secondary service area (19% and 18%, respectively). The few companies in the primary service area usually employ between 51 and 100 people, although one employs more than 5,000. There are many more companies near the boundary of the secondary service area, and half employ between 26 and 50 people. Six companies have more than 5,000 workers. College attendance rates are moderate (P - 12%, S - 9%). Out of the total non-traditional population (P - 8,360, S - 116,861), 25 to 34 is the largest age group (P - 27%, S - 27%). Private competition includes both large and small institutions, all located in the secondary service area. The lack of large population centers in the primary service area, and the secondary service area population at the outer boundary greatly restricts the non-traditional potential at this campus.

Fredonia Service Area

This rural area consists of all of Chautauqua county and parts of Cattaragus and Erie counties. Most of the towns have less than 2,500 people

(P - 59%, S - 68%). Total employment is 21,976 in the primary and 38,602 in the secondary service area. The highest percentages are in Operative (P - 17%, S - 23%); Craftsmen and Foreman (P - 16%, S - 16%); and Service fields (P - 15%, S - 15%). Industrial size is generally in the 26 to 50 employee range (P - 42%, S - 33%). There are few large employers and only one greater than 5,000. College attendance (P - 11%, S - 11%) and completion of four years (P - 10%, S - 10%) are both moderate. Out of the total non-traditional population (P - 14,180, S - 28,750) the 45 to 54 age group has the highest percentages (P - 29%, S - 29%). The lack of any large cities and the small potential population should restrict non-traditional recruitment greatly.

Geneseo Service Area

This largely rural area includes all of Livingston county and parts of Alleghany, Genesee, Monroe, Ontario, Steuben, Wyoming and Yates counties. There is a predominance of small towns, particularly in the primary service area (P - 82%, S - 68%). Only in the secondary service area are there any large cities with more than 50,000 people. Total employment is 17,642 in the primary and 203,522 in the secondary service area. Highest percentages are in Professional and Technical (P - 17%, S - 20%), and Service fields (P - 18%, S - 11%). The typical industrial size is from 26 to 50 employees (P - 42%, S - 41%), with no very large employers in the primary, but seven over 5,000 in the secondary service area. College attendance levels are fairly high (P - 13%, S - 14%) as is the completion of four years (P - 12%, S - 20%). Out of the total non-traditional population (P - 12,118, S - 291,820), the largest age group is 25 to 34 (P - 27%, S - 28%). Private college competition is all in the secondary service area and consists of both large and small colleges. Public competition is from the largely overlapping service areas of the University College at Brockport. The potential for non-traditional students is limited within the primary service area, however, it might be possible to recruit within the more populated portions of the secondary service area.

New Paltz Service Area

This suburban service area includes all of Dutchess county and parts of Greene, Orange, Putnam, Sullivan, Ulster and Westchester counties. The primary service area is made up of middle-sized towns (51%), while the secondary service area has many small towns (46%) and middle-sized towns (35%). Total employment is 49,015 in the primary and 72,765 in the secondary service area. It is concentrated in Professional and Technical (P - 18%, S - 17%); Operatives (P - 18%, S - 18%); and Service fields (P - 16%, S - 18%). Typical company sizes are between 26 and 50 employees (P - 39%, S - 40%) with a high percentage above 100 workers (P - 35%, S - 35%). College attendance levels are moderate (P - 10%, S - 9%) as are completion of four years (P - 10%, S - 8%). Out of the total non-traditional population (P - 33,352, S - 43,861), the largest age group is between 45 and 54 (P - 29%, S - 26%). Private competition is from two small colleges in each of the service areas. The lack of private competition and middle sized cities should provide moderate potential for non-traditional recruitment.

Oneonta Service Area

This sparsely populated, rural area consists of all of Otsego county and parts of Chenango, Delaware, Madison, Oneida and Schoharie counties. It is comprised almost exclusively of small towns (P - 58%, S - 72%) with only three towns greater than 10,000. Total employment is 14,362 in the primary and 10,543 in the secondary service area. Largest percentages are Managers and Administrators (28%) and Professional and Technical fields (20%) in the primary service area, and in the secondary service area, Operatives (22%) and Professional and Technical fields (16%). Industrial size is typically in the 26 to 50 range (P - 34%, S - 57%). College attendance is fairly high (P - 13%, S - 12%) and completion of four years is even higher (P - 20%, S - 12%). Out of the total non-traditional population (P - 5,634, S - 8,030), the largest age group is between 45 and 54 (P - 28%, S - 28%). Private competition is from one small college. The very small city sizes, low total employment and small non-traditional populations in both service areas do not provide much potential for recruitment.

Oswego Service Area

This primarily rural area includes parts of Cayuga, Onandaga, Oswego and Wayne counties. Most cities are less than 5,000 in size (P - 60%, S - 77%), although there are three cities between 25,000 and 50,000 and one city greater than 50,000. Total employment is 23,209 in the primary and 168,162 in the secondary service area. In the primary area, the highest percentages are in Operative (19%), and Professional and Technical fields (17%), while in the secondary area, Clerical (23%) and Professional and Technical fields (18%) are highest. Typical industrial size is between 26 and 50 employees (P - 44%, S - 57%), although there are significant numbers of moderately large and several very large employers in each service area. College attendance is fairly low (P - 8%, S - 9%) as is completion of four years (P - 9%, S - 7%). Out of the total non-traditional population (P - 14,767, S - 105,354), the largest age groupsare between 45 and 54 and 25 to 34, respectively (P - 29%, S - 30%). Two large private colleges compete in the secondary service area. The potential is fairly constrained since the primary service area has few towns, and the large cities are at the boundary of the secondary area.

Plattsburgh Service Area

This extremely rural area consists of all of Clinton County and parts of Essex county. Almost all towns have fewer than 5,000 people (P - 80%, S - 93%), and no information is available for other variables relating to the secondary service area. Total employment is 16,837, primarily in Service (21%) and Professional and Technical fields (21%). Industrial size is in the 26 to 50 employee range (41%). College attendance is very high (57%) and completion of four years is also high (20%). The largest age group is between 25 and 34 (30%) out of the total non-traditional population of 11,845. There is only one small college for private competition. Prospects for non-traditional recruitment are very low because of the extremely small population.

Potsdam Service Area

This extremely rural area consists of parts of St. Lawrence county. Almost all towns are smaller than 5,000 people in both service areas, and no demographic information is available for either area. There is only one employer, with 500 to 1,000 employees, located in the secondary service area. Non-traditional prospects must be considered as almost non-existent.

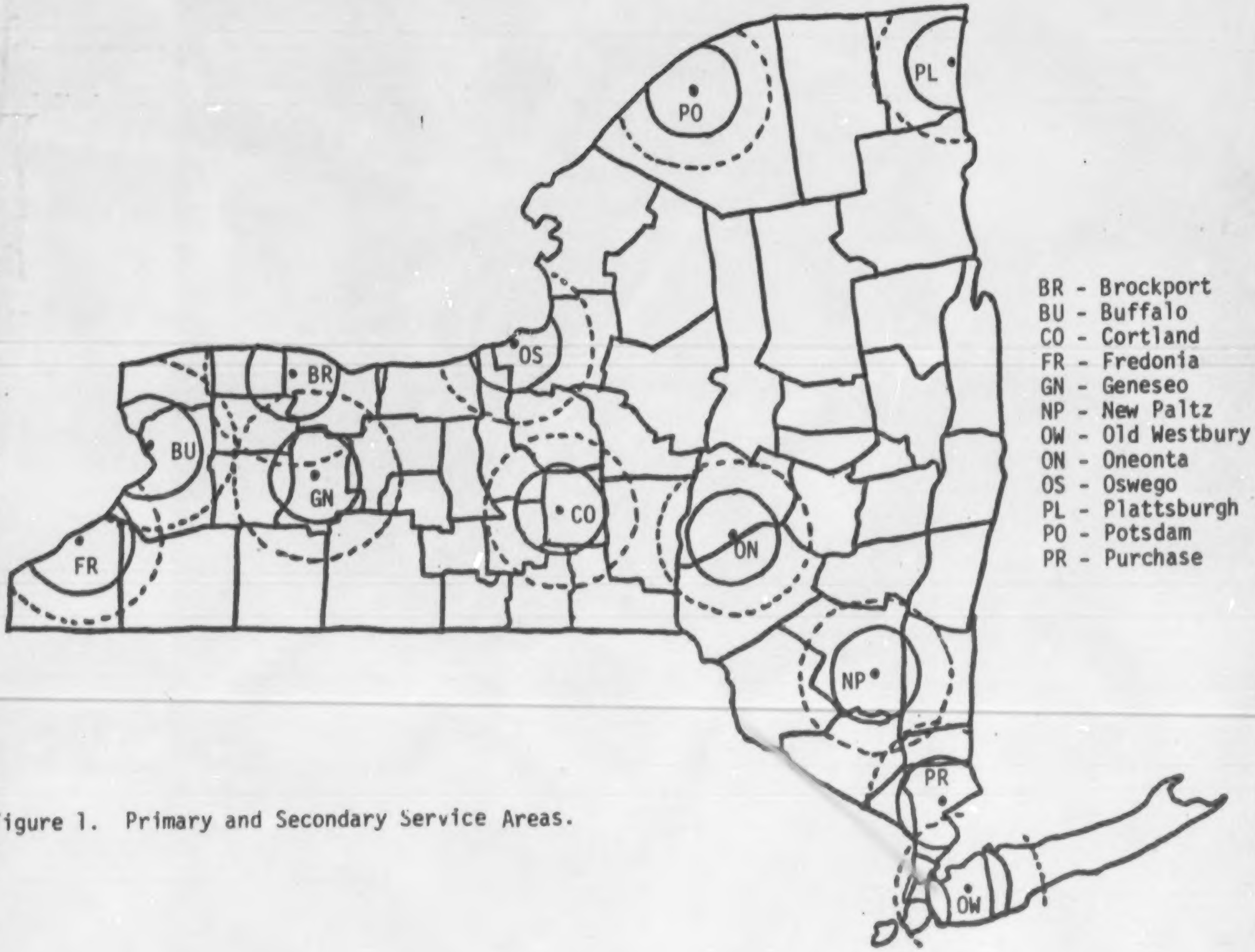
Purchase Service Area

This urban-suburban area consists of all of Dutchess, Putnam, Rockland and Westchester counties and parts of Orange county. Middle-sized cities predominate (P - 32%, S - 29%), and there are several large and very large cities as well. Total employment is 253,986 in the primary and 63,300 in the secondary service area. The highest percentages in the primary area are in Professional and Technical (24%) and Manager and Administrator fields (14%), and in the secondary service area, in Operative (22%) and Service fields (18%). Industrial size is concentrated in the 26 to 50 employee range (P - 36%, S - 43%), although there are significant numbers of large and very large companies. College attendance levels are moderate (P - 12%, S - 9%) and completion of four years is very high (P - 23%, S - 15%). Out of the total non-traditional population (P - 165,667, S - 47,381), the largest age groups are 35 to 44 and 25 to 34, respectively (P - 27%, S - 27%). There is extensive competition from small and medium sized private colleges, particularly in the primary service area. Despite the high private competitive levels, the high employment, educational and non-traditional levels, particularly in the primary service area, provide extensive potential for recruitment.

Conclusion

The entire New York State potential for non-traditional students is very high. There are 8,453,508 people between 25 and 64, with 27% between 25 and 34, 25% between 35 and 44, 26% between 45 and 54; and 22% between 55 and 64. The total employment is 6,082,362, heavily concentrated in Clerical (19%), Operatives (15%) and Craftsmen and Foremen (14%). Almost one million people have 1 to 3 years of college and one and one-quarter million have four years of college.

The potential for the State University Colleges is a small fraction of this amount. Buffalo, Brockport, Old Westbury and Purchase are the only campuses that have relatively high potentials in their service areas. Geneseo and New Paltz have moderate potentials. Cortland, Fredonia, Oneonta, Oswego, Plattsburgh and Potsdam have low potentials. As a result, some campuses may be able to offset some of the anticipated enrollment declines with increased numbers of non-traditional students. It cannot be a major factor for the system of University Colleges as a whole.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FR - Fredonia
GN - Geneseo
NP - New Paltz
OW - Old Westbury
ON - Oneonta
OS - Oswego
PL - Plattsburgh
PO - Potsdam
PR - Purchase

Figure 1. Primary and Secondary Service Areas.

TABLE 1 - CITY SIZE CATEGORIES

Categories	Primary Area		Secondary Area	
	N	%	N	%
Less than 2,500	12	39	31	47
2,500 - 5,000	8	26	14	22
5,001 - 10,000	3	10	13	20
10,001 - 25,000	5	16	3	5
25,001 - 50,000	1	3	3	5
Greater than 50,000	2	6	1	1
Total	31		65	

TABLE 2 - AREA OCCUPATIONAL CATEGORIES

Categories	Primary Area		Secondary Area	
	N	%	N	%
Professional and Technical	16,730	21	30,826	21
Managers and Administrators	11,375	14	20,280	14
Sales Workers	6,523	8	12,963	9
Clerical Workers	9,011	11	21,387	15
Craftsmen and Foremen	12,344	15	19,489	14
Operatives except Transport	9,549	12	13,401	9
Transport Equipment Operatives	1,777	2	2,606	2
Laborers except Farm	1,723	2	3,398	2
Agricultural	806	1	1,593	1
Service except Private Household	10,928	13	16,296	11
Private Household Workers	283	0	589	0
Total	81,049		142,828	

TABLE 3 - AREA EMPLOYERS BY NUMBER OF EMPLOYEES

Employee Categories	Primary Area		Secondary Area	
	N	%	N	%
1 - 25	244	51	59	41
26 - 50	81	17	24	17
51 - 100	60	12	27	19
101 - 250	47	10	11	8
251 - 500	16	3	12	8
501 to 1,000	17	4	4	3
1,001 - 5,000	10	2	4	3
5,001 and up	6	1	2	1
Total	481		143	

TABLE 4 - AREA EDUCATIONAL LEVELS

Educational Level	Primary Area		Secondary Area	
	N	%	N	%
Four Years of High School	21,616	35	36,951	32
One to Three Years of College	7,690	12	20,589	18
Four Years of College	7,523	12	31,992	28
Total	36,829		89,532	

TABLE 5 - AREA AGE DISTRIBUTIONS

Age Distribution	Primary Area		Secondary Area	
	N	%	N	%
25 - 34	51,834	30	29,373	26
35 - 44	39,943	23	31,359	28
45 - 54	42,484	25	29,453	26
55 - 64	36,510	21	21,562	19
Total	170,771		111,747	

TABLE 6 - AREA PRIVATE COLLEGE COMPETITION

Enrollment	Primary Area	Secondary Area
Less than 3,000	3	0
3,001 - 6,000	0	0
6,001 - 9,000	1	0
Greater than 9,000	1	0

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THE EFFECTS OF UNION EXCLUSION ON INTERGROUP WORK BEHAVIOR IN THE MASSACHUSETTS STATE COLLEGE SYSTEM

Anthony F. Ceddia
Executive Vice-President
North Adams State College
North Adams, Massachusetts

Fundamentally, an organization is composed of groups of people. The results of such an arrangement of people is determined to a considerable extent by their capability to work together (Etzioni, 1964). Colleges and universities are complicated human organizations made up of numerous clusters of people placed in several work group categories.

For many institutions of higher education, collective bargaining has become a means of conflict resolution. In fulfilling this role, collective bargaining, according to Lee (1978), has affected many organizational dynamics and campus intergroup relationships (p. 4). Although important, collective bargaining itself is not the primary focus of this study. Rather, those organizational characteristics, such as intergroup productivity, communication, and cooperation, that probably have been influenced by collective bargaining, are significant in this research. Hopefully, the following study and analysis will help contribute to better administration, management, and planning in colleges and universities.

The opportunity to bargain collectively first became available to Massachusetts State employees in 1970 (Tice, 1972). As a result, employees of the Commonwealth, exclusive of elected or appointed personnel, were given the right to bargain collectively with respect to all conditions of employment, except salary and fringe benefits.

In 1973, the General Laws of Massachusetts relating to the scope of collective bargaining rights for public employees were further amended, expanding the punview of bargaining to wages, fringe benefits, standards of productivity, binding arbitration, and agency fee (Massachusetts General Laws Annotated, Vol. 22, 1978, pp. 91-224). As a result of these amendments, State College administrators, faculty, and nonprofessional personnel formed system-wide employee units affiliated with national union organizations.

Another outgrowth of the new labor legislation in 1973 was the establishment of a new employee work group classification. Specifically, managerial (supervisory) or confidential (entrusted with private matters) employees were excluded from rights provided through collective bargaining authorization.

The problem, as identified by the researcher, is that little or no attention has been given to the introduction and presence of a new face-to-face work group of union-excluded personnel on each campus. Many employees who have been categorized as excluded are confused about their role and status. Consequently, organizational effectiveness and employee relations have been affected by the lack of a clear understanding and definition of the role and status of excluded personnel. Also not seriously considered has been the impact of this new group on the attitudes and behaviors of existing campus work groups. The researcher has assumed that the bold introduction of this new work group has negatively influenced campus intergroup work behavior within the system and thereby reduced organizational effectiveness. Intergroup communication, cooperation, and productivity have been particularly affected.

The purpose of this study is to determine the effects of having introduced a new face-to-face work group within college organizations throughout the Massachusetts State College System, and this new work group's influence on intergroup communication, cooperation, and productivity. An additional objective of this study is to assess some of the impact of unionization on organizational behavior.

The hypothesis tested in this study is as follows: The introduction and presence of a new work group has negatively affected intergroup communication, cooperation, and productivity in college organizations throughout the system. This group is composed of certain college employees excluded by legislation from the privileges of collective bargaining because of their managerial, confidential, or supervisory personnel function.

The related research questions within the scope of the study are as follows:

1. Have individual employee feelings involving job satisfaction, morale, participation, and personal needs been affected by the introduction and presence of a new campus work group of excluded personnel?

2. Have the characteristics of cohesiveness, leadership, participation, and morale of other college work groups been affected by

the introduction and presence of a new campus work group of excluded personnel?

3. Have organizational traits such as climate, cohesiveness, leadership, and participation been affected by unionization?

The research methodology utilized in this study was ex post facto, a causal-comparative approach. The causal-comparative technique was appropriate because the environments within which the subjects function precluded any selection, control, or manipulation of factors necessary to study relationships experimentally (Lehmann & Mehrens, 1971; Best, 1977). Furthermore, with the setting for the study the entire Massachusetts State College System (10 colleges) and the respondent population drawn from all full-time personnel (3358), it was unrealistic to attempt to control for variability. Also, at the time of this study, the independent variable or the formation through legislation of a new campus work group of excluded personnel had already been effectuated.

Then, based on assumptions by the reseacher from direct experience with the study setting, some of the possible confounding influences in the study were identified and categorized as intervening and moderating. The intervening,which would theoretically affect the results,was unionization, and it was assessed to determine its impact.

In the Massachusetts State College System, all full-time personnel, had been categorized into four campus work groups. This cluster classification was the result of collective bargaining unit designations, negotiated contracts, and state college personnel management policies. The categories, including the number of employees within each, were as follows: (a) administrators (373), (b) faculty (1786), (c) nonprofessional staff (1017), and (d) excluded personnel (managerial 105, confidential 45, and supervisory 32). The total number of possible subjects was 3358 (MSCS Fiscal 1980 Budget Presentation, 1979).

To carry out the investigation, the researcher determined that the most appropriate and efficient means of gathering data was to administer a uniform survey instrument to all subjects in the population. No existing instrument was easily adaptable to this investigation; therefore, based on the study design, an instrument was constructed by the researcher. DeGroot (1969) indicated that "in the behavioral sciences, in particular in the field and applied investigations, instruments must often be constructed ad hoc" (p. 181). The survey instrument included a combination questionnaire-opionnaire or attitude scale (Best, 1977, pp. 169-170).

Ordinarily a study of this nature would involve a random sampling of the population investigated; however, a survey of the entire population was required because it was necessary to guarantee all respondents anonymity, rather than just confidentiality, in order to gain the cooperation of all of the employee unions involved (Berdie & Anderson, 1974, pp. 54-55).

The survey instrument combined a questionnaire to ascertain permanent background data and an opionnaire to assess attitudes on campus work group behavior. The attitude assessment section contained both objective and subjective response modes. For the fifty objective statements, a five category Likert-type response scale was used. This alternative was employed by the researcher in this section because the Likert scale provides response alternatives that are considered approximately equal in attitude or value loading and reflect the respondent's level of acceptance or rejection of the item (Tuckman, 1972, pp. 156-161).

The subjective section of the opionnaire contained two open-ended questions. These questions were included so that subjects would have the opportunity to respond in detail to the study constructs and a place to discuss in some manner the reasons for their attitudes (Mouly, 1963, p. 247). The instrument was pre-tested on a sample of the population and appropriate changes were made.

The following procedures were utilized in the data collection phase: The Chancellor, presidents, and union officials were briefed on the nature and scope of the study. Pre-addressed manila envelopes (first wave) for all subjects were delivered to the mailrooms of the ten colleges. They were immediately distributed through the on-campus mail process. Approximately ten days after the first surveys were distributed, a second set (second wave) in pre-addressed white envelopes was delivered to the mailrooms of the ten state colleges. First returns were picked up at the colleges when the second wave was delivered. The second returns were gathered from each college approximately two weeks later. During this latter visit, arrangements were made to have any additional responses, after their initial return to the mailroom, packaged and mailed to the researcher.

There were 1356 subjects who completed and returned the survey in time for inclusion in the sample. This represented 40.5% of the total population. The first wave yielded 970 responses or 28.9%. The second wave yielded 345 responses or 10.3%. There were 41 or 1.3% uncodable surveys. Another 28 questionnaires were received after the deadline, bringing the response rate to 1384 (41.2%).

The following is a summary of the methods used to analyze the study data pertinent to the hypothesis and related research questions.

1. An overview was presented of certain characteristics of the entire study population.

2. Responses to the questionnaire section of the instrument were analyzed utilizing crosstabulations and one-way analysis of variance with Scheffe's testing denoting pairs of groups significantly different at the 0.05 level (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975, p. 428).

3. The attitude assessment or opionnaire section of the instrument was basically analyzed by work group responses. A crosstabulation with one-way analysis of variance and Scheffe's test was completed for each item.

4. A factor analysis of responses to the 50 items in the opionnaire section was completed. This process attempted to synthesize the data and identify underlying relationships among the items (Nie et al., 1975, p. 472).

5. Finally, responses to the open-ended questions were coded, classified by work group, and categorized by response. The replies were also summarized.

The respondent population consists of 1310 (39%) employees in the Massachusetts State College System (Table 1). Of the respondents, 758 (58%) are male, and 552 (42%) are females. These characteristics appear to be consistent with those reported for the study population.

Table 1

Summary of Survey Distribution and Response

	Union Excluded			Fac.	Admin.	Nonpro.	Total
	Mgr.	Clk.	Sup.				
n Distributed	105	45	32	1786	373	1017	3358
n Respondents	74	31	19	635	199	352	1310
% Response	70.5	68.9	59.4	35.6	53.4	34.6	39.0

The following are summary statements regarding the study hypothesis and the related research questions:

1. Generally, the implementation of the principle of union exclusion has had a negative impact on campus intergroup work behavior. Its bold and unexplained introduction has confused and perplexed all work groups. By segregating certain employees, the balance of intergroup relations has been upset, and the dynamics of the campus organization have been altered.

2. For both excluded and unionized employees, their feelings regarding job satisfaction, morale, participation, and personal needs have been affected by exclusion. Some union-excluded personnel feel they have been cut off from other employees and are dissatisfied with their ambiguous status. Some unionized employees, especially nonprofessionals, have negative feelings about exclusion. They feel it has produced jealousy, uncertainty, hostility, resentment, and divisiveness. Exclusion, therefore, has negatively affected the

attitudes of many employees.

3. The introduction of union exclusion has affected the membership and leadership patterns of both the nonprofessionals and administrators. The nonprofessionals have had more difficulty in dealing with this situation. On the other hand, the administrators have remained closely aligned with their excluded counterparts, causing them to have weaker group cohesiveness and poorer union identity. For union-excluded personnel, work behaviors have also had to be readjusted because of changed status and, for some, new responsibilities. Although faculty work group membership has not been directly affected by exclusion, and many faculty remain undecided about it, some faculty work attitudes have been altered. These faculty feel that exclusion has further isolated college leadership, and communication has become more structured and less collegial. In summary, group behavior patterns have been adversely affected by exclusion.

4. Although unionization has heightened work group identity among the faculty and nonprofessionals, it appears to have fragmented other organizational behaviors. Unionization has produced a distinct division of labor within the college organization, and many employees, particularly faculty, feel this has reduced their organizational participation. At the same time, employees recognize that productivity has remained unchanged. In the opinion of some, unionization has inhibited creative leadership. It has caused more alienation among work groups, and has created new group and organizational hierarchies. This has further formalized campus organizations and depreciated

aspirations for a collegiate community of interest. Organizational traits have been affected by unionization.

A complete copy of the study can be obtained from the author or through the University of Michigan Microfilms.

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METHODOLOGICAL ISSUES IN FACULTY SALARY COMPARISONS ACROSS INSTITUTIONS

Simeon P. Slovacek
Paige V. Ireland
Cornell University

Introduction

College Administrators such as Presidents, Provosts and Deans are annually faced with the policy question of how to fairly compensate their faculties. This discussion addresses some of the issues in effecting reasoned salary comparisons. These considerations include geographic cost of living differences, tax rate differences, defining the comparative unit, labor market forces in field or discipline differences, unequal ranks with the same name, program building, higher ranking faculty recruited from outside, super stars and Nobelists, choosing appropriate peer groups, different turnover rates, and other issues. Understanding when to control or use related measures can enormously improve a comparative analysis of faculty salaries.

Because of the complexity of sorting out the determinants of salary at multiple institutions, however, a rigorous controlled comparative analysis may not be possible. In point of fact, it is rarely if ever, done. Several major comparative salary studies collect and report only data on salary and compensation levels by rank. For example, the AAUP annual compensation surveys[1] report rank data for individual institutions as well as groups of institutions. Other annual surveys such as the Columbia[2], the MIT[3], and the National Association of State Universities and Land-Grant Colleges' Survey[4] disassociate to varying degrees, data by discipline or field groupings. Many other individual institutions too numerous to name here, have identified peer schools and conducted periodic salary studies along similar lines. The question of fair faculty compensation levels is of great importance to institutions, as is easily ascertained from the amount of institutional and organizational effort devoted to conducting and participating in these surveys. The perhaps too obvious assumption undergirding these inquiries is that, to maintain or improve institutional quality, one's faculty salaries must remain competitive with those paid at peer institutions. Salary studies help determine how "competitive" an institution is.

Given this is a commonly accepted purpose of salary studies, we suggest the current approach falls short of its objective by ignoring several legitimate determinants of salary, which could produce situations where institutions paying the same average salaries are not equally competitive and, likewise, where institutions paying unequal salaries are highly competitive. In other words, we argue there exists a number of factors that render the relationship between raw salary levels and competitive equity imperfect, if not weak. Several factors are discussed with respect to their potential to influence salary levels.

Adequate measurement of all relevant factors for subsequent control is difficult under normal circumstances where resources and time are short. Yet, since comparative data are needed by administrators to make policy decisions, we argue that several other measures of "competitiveness" exist and should be reviewed and used to supplement raw salary level comparisons. Let us, however, first turn to the several factors which can or should influence salary levels and, therefore, comparisons of salary levels.

Factors Influencing Salary Levels

In the following section the rationale for considering a number of factors is briefly sketched. The list is not exhaustive but illustrates the problems in effecting comparisons.

1. Geographic Cost of Living Differences

Although Harvard and MIT seem to top Indiana and Iowa in faculty compensation it is a safe bet that the cost of living is higher in

Boston than in Bloomington, for example. If corrected by converting to constant dollars it could conceivably turn out that Iowa bestows more buying power on its faculty than MIT even though MIT's actual dollar salary levels are higher.

2. Compensation vs. Salary

Total compensation seems to be a fairer choice of unit than salary, however compensation has its measurement problems. Aside from the problem of converting fringe benefits to the metric unit (dollar), a certain proportion of fringe benefits are voluntary. The amount of extra life insurance, the decision to take advantage of an employee degree program, the decision to send one's children to college at the University's expense and so on, are voluntary decisions made by the employee. Thus different consumption of benefits patterns across universities could translate into different total compensation levels even though salaries are equitable.

3. The Super Star Investment Phenomenon

It is a well known, seldom aired fact that some universities choose to compete for the famous, the prodigious producers, the academic elite. Thus the salaries of this select group tend to bias upward the average salary or compensation of the faculty especially at the rank of professor. The significantly higher salaries paid to such individuals are often vindicated by the volume of additional research funds the individuals attract to the University.

4. Adjusting for Rank

Although it is obviously invalid to compare assistant professors' salaries with professors', to merely control for or compare by rank is probably not enough. There are some serious definitional problems and incongruencies with the meaning of the different professorial titles.

This is evidenced by the length of stay in the ranks of assistant and associate professors. There are large disparities from department to department even within universities. An example might serve to illuminate the problem: clearly, if the average length of stay at the associate level is three years at college X and 12 years at college Y, the title of associate professor is not equivalent at the two colleges. It also follows that neither is the title of professor equivalent: it is a more prestigous rank at college Y.

5. Labor Markets

One of the critical components in salaries that often gets left out of faculty salary discussions is the importance of the labor market. Specifically there are different supplies and demands for each of the individual fields at different times. For example, suppose there is currently an over-supply of Ph.D's in Education and a shortage in Engineering operations research. Labor market competition dictates that one needs to offer the O.R. trained person more in order to attract qualified applicants than one needs to offer the Education professor. Thus it follows that to a significant extent, the configuration of faculty by department or field will influence an institution's salary profile. One might expect a law school to be paying its faculty more than a liberal arts college because a law school draws from a different labor market and not because it is more generous and benevolent. A better unit for comparisons than whole institutions, needs to be used. Studies such as the AAUP salary studies[5] wholly ignore the mix of disciplines in institutions.

6. Selection of Peers

Since the labor market varies by field it makes much more sense to compare salaries of like departments at different institutions, than to examine institutions' aggregate salaries as does the AAUP in their salary studies. Similar academic reputation is probably the most defensible criterion for selecting peer departments or colleges, although reputation data may be unreliable or hard to find.

7. Recruiting Outside Faculty

In filling the higher faculty ranks, institutions may find that recruiting tenured professors from outside the institution is generally more expensive in terms of salary, than promotion from within. Perhaps this is because the former necessitates uprooting established practices and families, and therefore requires larger incentives.

8. Experience and Time

While controlling for or reporting by rank removes some of this problem, essentially we generally expect older, more experienced faculty to be paid more even within ranks, if for no other reason than because they have been eligible for more salary increases over the years. Institutions' faculties clearly differ on such things as mean age and mean time in rank for a variety of reasons.

9. Supplemental Income

A recent study reported in the Chronicle of Higher Education[6] found that faculty members at research institutions collected an average 21% over their base salaries for such activities as summer teaching, research, patent royalties, consulting, book sales, public speaking and so forth. The same study reported supplemental income ranging from 1% to 56% of base salary. Typically only base salaries and compensation are used in comparative salary studies. Clearly the opportunities for earning such supplemental income vary with institutions. Consulting opportunities are more numerous in Boston and Washington, D.C. than in Anchorage, Alaska.

10. Definition Anomalies

Often slight changes in survey and institutional definitions can produce significant changes of the composition of the groups included, resulting in shifts in salary levels. For example, Cornell University must exclude almost one half of the faculty in its Statutory Colleges when reporting faculty salaries in the HEGIS Employees report because of the significant research and Cooperative Extension activities faculty carry on.

The above are a few of the factors which can influence institutional or departmental faculty salaries. While sufficient data allows controlling for any or all of these influences in a comparative salary analysis, it is not clear one should always do so. For example, in spite of geographic cost of living differences, one could still argue the actual dollars are more tangible (and spendable) than constant dollars, thus the former are more important in faculty decisions of where to work. One suspects few individuals take cuts in salary and seriously expect to improve their standards of living in their new locations.

A reasoned approach to constructing comparative faculty salary analyses includes both knowing what the contributing factors are and knowing how and when to use or control for them. The major point of the foregoing discussion has been to demonstrate how woefully misleading raw average salary levels can be in assessing competitiveness.

Before leaving this section we should point out that there is a difference between "is" and "ought". Essentially, while some of the above factors already influence salary levels, others may not but should. For example, it is easy to understand that because of opportunity costs, high quality physicians are more expensive to retain as faculty than high quality professors of education. Thus, few individuals are surprised to see that the former earn more than the latter group in salary studies reporting data by discipline. On the other hand, few institutions seem to consciously increase their faculty's salaries by increments corresponding to possible higher costs of living associated with their geographic locations. For one thing, the data on geographic cost of living differences are not readily available for cities or towns. Price data, however, is available.[7] An institution would be well advised to consider cost of living when setting salary levels to remain competitive. A better definition of competitive rather than "equal salaries," would be salaries that enable faculty to enjoy similar standards of living.

Given that all of these factors can play a role, it follows that they should be controlled or accounted for in a reasonable comparative analysis. Space disallows demonstrating techniques for controlling such extraneous and situational variables. Standard statistical techniques such as regression analysis could be employed once data on the relevant factors have been collected. There is no substitute for good judgment in determining which things should be accounted for or what the effect of an unmeasureable factor might be. Specific analytic techniques in faculty salary comparisons could well require a separate research paper to discuss adequately. What we are proposing should be done is to exercise appropriate controls whenever feasible. Furthermore, one should supplement the analysis of conventional salary data with additional measures of competitiveness, which is defined to be the ability to attract new faculty and the ability to keep current faculty. The next section proposes several statistics which are felt to reflect and operationalize this notion of competitiveness.

Indicators of Institutional Competition for Faculty

The following discussion approaches the notion of competitiveness from two perspectives. First, indicators of institutions' abilities to keep existing productive faculty members from leaving, are discussed. Secondly, indicators of institutions' abilities to attract new highly qualified faculty are presented.

In point of fact there is significant overlap in that many of these indicators apply to both abilities to attract and keep faculty.

A. Keeping Existing Productive Faculty

1. Turnover Trends

Perhaps the most important indicator of competition for faculty is that of voluntary resignations. Faculty members leaving of their own accord indicate that there are better opportunities elsewhere. The resignation rate can be a visible indicator of such things as wide-spread dissatisfaction with salary, weather, geographic location, administration, facilities, opportunities for self, spouse or children, the field or academia in general. If over time, the resignation rate is increasing as a percent of the total faculty, there is a very good possibility that other institutions or industry are competing more effectively. Admittedly there are faculty who have had opportunities elsewhere, but have chosen (or been persuaded) to stay at their institution for a variety of reasons.

Trends in voluntary resignation of tenured faculty are perhaps the most important indicators of competition elsewhere because the instituton has devoted much time and effort to its tenured faculty members. This is not a conclusive indicator of dissatisfaction but one which should be explored further either among peer institutions or in an analysis over time within a single institution.

2. Leaves of Absence Without Salary

This is another indicator of competition although no hard and fast conclusions can be made. Often, a faculty member will go to another institution and end up accepting a position there. These two events are not directly correlated, but it should be known that if the number of leaves of absence without pay are increasing, the likelihood of losing faculty members to other institutions is probably increasing.

3. The Status of the Profession Outside the Academic Community

Labor market factors are an important indicator of competition because industry or government may be willing to pay considerably larger salaries than a university. Some fields that are currently in great demand outside academia include engineering, economics, law, and business. The greater the salary and status differentials, the more difficult it will be for universities to keep faculty in these fields.

4. Research Facilities

The availability of modern state-of-the-art research facilities allows a university to keep faculty whose research depends on special equipment or laboratories. If an institution is falling behind in construction or renovation of such facilities, faculty may not wish to remain in its employ.

5. Consulting Leave Policies

Liberal consulting leave policies allow faculty to have the "best of both worlds": an academic position and status and opportunity in industry or government. If an institution does not have a liberal consulting leave policy, faculty members may decide to leave academia altogether and pursue a further career in industry.

6. Summer Salary Policies

If an institution is able to guarantee that faculty members will be able to supplement their 9-month salaries with either teaching or research during the summer it will probably be in a better competitive position than an institution that cannot guarantee such supplements.

Keeping existing productive faculty at a university is a very important thing for the institution. Often considerable time and effort has been expended in recruiting faculty in the first place. If turnover becomes great there is a loss of program continuity and further expense to the institution for replacing the person. This is especially apparent with the loss of tenured faculty. Most important, however, is that an institutional inability to keep good faculty is indicative of a weak competitive position.

B. Attracting New Faculty

1. Starting Salaries

This has probably been the most studied aspect of competition for new faculty. As mentioned earlier in this paper, salary is not necessarily the most appropriate way to judge the opportunities available at an institution. Certainly if a starting salary is considerably lower at one institution compared with a similar position at another institution, there must be some other overriding considerations for a potential faculty member to choose the lower paying job. The following points are an attempt to explore some of these other issues.

2. Reputation of the Institution

This is probably an important factor in the choice of a faculty member. If the university is very well-known for its research facilities then the opportunities for faculty are better than an institution without such facilities.

Advancement through the ranks may be another aspect of reputation. If high quality faculty are aided by the university and its facilities through rapid advancement and recognition, this may be a consideration in the choice of an employer.

A third aspect of reputation is that of affirmative action. A female or minority may not wish to work at a university that does not have the reputation of being progressive or at least fair with equal opportunities.

3. Unfilled Faculty Positions

The extent of unfilled faculty positions may be an indication of dissatisfaction with a variety of offerings (or lack of) at the recruiting institution. Salary levels may be only part of the problem. If an institution seems not to be able to efficiently and effectively recruit new faculty, it should explore in-depth the exact reasons for this inability and endeavor to change the situation.

4. Availability of Jobs for Spouses

Recruitment of one faculty member is difficult enough, but with the increase in the number of dual-career couples, finding a job for the spouse makes the situation even more difficult. An institution may be severly hampered (or aided) by its location. Metropolitan areas have considerable advantage in this situation because there are many more job opportunities than in rural locations. An option for institutions in rural areas is increased usage of career-sharing. If this option is not available or impractical, rurally located institutions may have more difficulty in recruiting faculty.

5. Filling Vacant Faculty Positions with Temporary People

Another indicator of problems with recruitment is the filling of faculty positions with temporary non-tenure track people. This may lead to a lower quality level of education for students. If there are increasing numbers of positions being filled temporarily this indicates some type of erosion in recruiting qualified faculty members.

6. Fringe Benefits Package

The discussion that salary alone is not the single most important aspect of a recruiting decision would be lacking without addressing the fringe benefit opportunities. Institutions have a variety of fringe benefits paid wholly or in part by the institution. The proportion of benefits paid for by the institution may have a bearing on the individual's decision to join the faculty. The extent and type of benefits afforded faculty is also a factor in choice of institution. The salary may be wonderful but if the benefits at a given institution do not approximate those available elsewhere, a potential faculty member may opt to go where the long-term benefits are better.

7. Availability of Funds for Tenured Positions.

Most of the above discussion related both to tenured and non-tenured openings. The availability of funding for new tenured positions is an indicator of an institution's desires to attract highly qualified and experienced faculty. If there is a downward trend in this number it may be not only an indication of an institution's budgetary problems but also an indication of lack of desire to recruit and compensate qualified faculty.

Recruitment of qualified faculty is the only way to replace losses due to turnover whether voluntary or involuntary. New faculty bring new ideas and spirit to an institution and are therefore a very important aspect of academia. The ability to recruit qualified faculty is affected by the above factors as well as others which are heretofore unknown or unexplored. Institutions should examine their relative situations in light of these factors and alter or expand those programs and policies which may be affecting their competitive edge.

Concluding Remarks

We have argued that comparing faculty salaries across institutions to determine the competitiveness of a particular institution's salaries can be inaccurate. A number of mitigating factors can easily influence salary levels; these factors are invisible in comparisons of raw averages and thus can make comparisons misleading. A well reasoned approach to controlling extraneous factors is suggested to improve comparative analysis. Also suggested is collecting alternative measures of an institution's competitiveness in attracting new faculty and keeping current faculty. These new data series should supplement and aid in interpreting salary comparisons. Although the discussion has assumed that the comparative analysis would be between institutions, much though not all of what has been said also applies to inter-departmental comparisons within a college or university.

It is the intention of the authors to provoke those engaged in conducting comparative salary surveys to re-evaluate the adequacy of their methods. Average faculty salary is at best a weak proxy for competitiveness in attracting and keeping excellent faculty and scholars.

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TRIAGE IN FACULTY DEVELOPMENT: ADVICE ON HOW TO SPEND YOUR MONEY

Michael C. T. Brookes
Dean of Faculty
Mount Wachusett Community College

William Lauroesch
Associate Professor
University of Massachusetts/Amherst

One of the papers delivered at this conference two years ago asserted that the education race in the foreseeable future would be run by horses already in stable (Lauroesch, Quilling, and Songer, 1978). No longer is the academic stable revitalized annually by incremental expansion of faculty ranks; rare are the opportunities for self-renewal by change of venue. Faculties are prisoners of their campuses, condemned until retirement to the society of their colleagues. Such static conditions invite stagnation, the antithesis of contagious enthusiasm which is at the heart of teaching. So goes the argument.

We are reporting today on a small-scale study of community college faculty who have experienced the conditions just described. The purpose of the investigation was to study the phenomenon of "stuckness" as a psycho-social consequence of being locked in (Kanter, 1979), and to look for evidence of possible immunity in the form of sustained generativity. We hypothesized that stuckness and generativity were identifiable in a population of senior faculty, and that both would be characterized by distinct clusters of behavioral and attitudinal manifestations.

The sample for this study was composed of twenty-seven professors who had taught ten years or more in one of five Massachusetts community colleges. Reference to this sample as senior faculty bears some explanation. Massachusetts, with the establishment of Harvard College in 1636, became America's first frontier of higher education. Lesser known is that the oldest community college in Massachusetts was not opened until 1960, just twenty years ago. Most of the community colleges in Massachusetts are closer to ten years old. To have taught for ten or more years in this sector makes one an old timer on the last frontier.

Data collection was by means of a survey instrument, a validated measure of job satisfaction, and an in-depth interview. When we began to analyze the data, we realized that we had transplanted the metaphor from the barnyard to the battlefield. While it remained our purpose to advise in matters of regrooming the stable--which in some quarters is called faculty development--we found ourselves in effect engaged in the brutal but eminently practical practice of triage--a systematic sorting device used by French surgeons in World War I to determine how to best invest their skills and inadequate resources to save the most lives.

Triage makes a quick sort into three classes--those who will survive and get well, even without medical attention; those who are so close to death that not even heroic measures will save them; and those whose prospects for survival are promising, if they receive quick and appropriate treatment. The original intent of the study was only to identify and characterize the sure survivors (the generative) and the moribund (the stuck). Clues to the identification of the generative and the stuck appear in the literature (Baldwin, 1979; Hodgkinson, 1974; Kanter, 1979; Erikson, 1950). An unanticipated outcome of the study was the conspicuous presence of a third category, here referred to as "insulated."

The characteristics of these sub-groups are as follows:

Generative faculty, as identified in this study, are glad that they entered teaching, get satisfaction from their teaching, have a positive attitude toward students, look forward to being in the same position five years hence, and have strong, student-oriented plans for the coming years.

Stuck faculty register overall dissatisfaction with their jobs, and they indicate dissatisfaction on most of the separate items associated with job satisfaction; derive little or no satisfaction from teaching; find the prospect of remaining in their positions unattractive and the notion of leaving teaching attractive, even though they may have made no plans to leave; and they do not have any student-oriented plans for the next five years.

Insulated faculty reveal dissatisfaction with some aspects of their jobs, but they register overall job satisfaction; do not regret having entered teaching, although they sometimes find it less than satisfying; and if they have sustained an interest in students, it is muted in their five-year plans. The insulated category corresponds to the "leveling off" stage of professional development described by Hall and Nougaim (1968).

Triage was accomplished by analysis of scores on the job satisfaction scale and disclosures of the interviews. The findings were reassuring. Only 11% were written off as irretrievably stuck, as opposed to the 26% of the senior faculty who remained generative. The largest category (33%) was the insulated, while 30% did not fit into any category. Only insulated faculty were identified on every one of the campuses included in the study. Some had no stuck faculty, some had no identifiable generative faculty, but all had insulated faculty.

There are no data to determine whether the presence or absence of stuck or generative faculty on a given campus is a function of individual campus environments, but we did find variables that could very well stem from campus policy. For instance, academic rank, number of promotions received, years since the last promotion, and whether or not the faculty member had ever been granted a leave appear to be linked to the likelihood of being stuck or generative. The presence or absence of these hygiene or maintenance factors is, of course, a consequence of policy and practice in a given college. In another sense, they are an institution's tacit statement of how much it values its faculty.

Two factors hypothesized to be negatively correlated with stuckness proved not to be related to any of the classifications. That assumption of administrative duties lessens the likelihood of stuckness was not supported. Faculty who had carried administrative responsibility were evenly distributed among all categories. Similarly, the hypothesis that faculty with prior experience at the secondary level are more likely to be generative was rejected. Faculty with such experience were evenly spread among categories.

An unanticipated outcome was the discovery that the sex of faculty is highly correlated with the phenomena of generativity and stuckness. Men are more likely to be stuck than women are; women are more likely than men to be generative.

Limitations of the Study

Because this inquiry was by design a small-scale, pilot study, its findings are suggestive rather than conclusive. The sample (N=27) represented only 13.5% of the senior faculty population, rendering it impossible to test for statistical significance. Additionally, while the procedures used accomplished the original intent of discerning the distinctive patterns of difference between generative and stuck faculty, they were less effective in discriminating between the insulated and those not categorized.

Conclusions

Subject to the caveats cited above, it is possible to draw certain inferences from the findings that are deemed useful to making decisions about how a community college allocates its limited resources to faculty development and renewal.

1. Generativity is, at least to some degree, impervious to the absence of hygiene factors. The truly generative do not depend on the institution for support and encouragement. It is important to note, however, that while a suitable reward structure is neither a necessary nor sufficient catalyst to generativity, it remains that generativity does thrive best in a supportive environment. Even though generativity tends to be self-sustaining, it would be a travesty to let it fend for itself without support systems.

2. No useful purpose is served by attending to stuck faculty. They are already moribund, and nothing the college can do will save them. Fortunately, the number is small.

3. Insulated faculty hold the most promise for return on investment. They comprise the largest category identified in this study, and on the average, they have twenty years of professional life left. Most important, they respond to institutional support; indeed, they require it. While they do not have the capacity to become super stars, they do have a high potential for professional competence that can be realized with institutional support and encouragement.

4. Formal programs of staff development have little impact on

senior faculty. Senior faculty attach no value to such programs; they do, however, attach significance to institutional support and encouragement of their own initiatives. Continuing involvement in professional development activity is a consequence of professional zeal, not a cause. Staff development money is best spent in support of grass-roots efforts.

Recommendations for Further Study

Accepting the premise that the quality of instruction in the community college sector is for the foreseeable future dependent upon sustaining the vitality of a relatively static faculty, every effort should be made to pinpoint the best uses of limited faculty development resources. While this study offers some insights, it remains tentative. There is a need for replication on an order of magnitude that will permit statistical verification of the findings. Additionally, there is a need for the study of younger cohorts, who may differ from the senior faculty examined here.

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SUMMARY INDICATORS OF UNDERGRADUATE INSTRUCTIONAL RESOURCE UTILIZATION: INTRA- AND INTER-INSTITUTIONAL COMPARISONS

Lawrence K. Kojaku, Director
Louis Zrebiec, Associate Director
Office of Institutional Studies
State University of New York at Buffalo

As instructional budgets become more austere and the anticipation of declining enrollments is added to decreasing public support and sharply rising fixed costs, colleges and universities will increasingly examine the extent to which instructional resources are used efficiently. The salaries of instructional personnel typically constitute an institution's largest budget item. The extent to which instructional staff are deployed in a maximally efficient manner can be investigated using various data.

Purpose

This paper seeks to examine a number of summary measures,which may be used as indicators of the efficiency of faculty utilization in undergraduate instruction. Comparison of examples of these indicators for academic units within one university and for each of four universities as a whole provides evidence of both the consistency at a single point in time and of the stability over time of the indicators and rankings based upon them.

Approach

The measures studied were delimited to those describing only undergraduate instructional activity, because norms of instructional practice are more common and comparable at the baccalaureate level than at the graduate or professional levels.

The data examples examined were five years (Fall 1975-Fall 1979) of aggregate statistics taken directly or derived from reports and publications generated by the State University of New York's Course and Section Analysis

(CASA). The CASA system is a computerized data base of records about courses and classes early in the fall term each year. Data pertaining to one university were examined by department within one organizational cluster and by cluster--corresponding to actual academic organization; data about the other three universities pertain to each of them as a whole.

Five summary indicators of instructional staff utilization were examined:

1. Percent of all undergraduate class sections with an enrollment of 10 or less. Included were sections for which the instruction type was described as lecture, seminar, recitation, and laboratory/activity; excluded were sections described as tutorial, independent study, and programmed instruction. Among Mayhew's (1979) suggestions for increasing faculty performance was the following:

> Over time, research has not established significant and demonstrable values of small classes as compared to large classes. With few exceptions, undergraduate classes might reasonably range from 15 to 100. Classes that consistently enroll fewer than 10 students should become candidates for elimination. The prevailing mode of instruction, even in classes called seminars or discussion classes, is still the lecture, and the lecture given to fewer than 10 students is almost a travesty. (p. 245)

2. Median undergraduate section size. Again, included were only sections described as lecture, seminar, recitation, and laboratory/activity. Rather than an arbitrary dichotomy, this indicator measures the central tendancy of the entire distribution of class size.

3. Undergraduate FTE students per FTE staff engaged in undergraduate instruction. The full-time equivalent faculty in this undergraduate student-faculty ratio reflects proration for instructors whose faculty contact hours were in both undergraduate and graduate courses. Halstead (1974) has stated that "Despite the fact that raising the student-faculty ratio is difficult and may bring about only limited savings, if the financial pressures continue, this means appears to be the only durable remedy to increase

educational productivity" (p. 637).

4. Total undergraduate faculty salary per undergraduate class section. The faculty salary in this ratio again reflects proration for instructors whose faculty contact hours were in both undergraduate and graduate courses. Consistent with the other indicators, only sections described as lecture, seminar, recitation, and laboratory/activity were included.

5. Total undergraduate faculty salary per undergraduate student credit hour. The faculty salary again reflects proration for faculty contact hours in undergraduate courses only. The student credit hours include all those generated in undergraduate courses.

The assumption is made in this study that since no widely accepted norms or standards exist for particular absolute values of these indicators, values obtained can only be interpreted in a relative context by comparing units with one another. Thus, rankings for each indicator of 1--"most efficient" to N--"least efficient," were examined by department, department cluster, and institution.

Findings

Table 1 displays the indicator values and rankings of 11 departments of a single organizational cluster at a single point in time. The range of values (percentages, numbers, and ratios) for each of the five indicators on which the department rankings were based was wide. However, it is difficult to reach a general conclusion about the relative position of a single department across the five indicators. For example, Department G-10 appears to have unacceptably low class sizes, moderate cost per credit hour, an above-average student-faculty ratio, amd the most efficient cost per credit hour.

This inconsistency across the five indicators is summarized by the standard deviation of the mean indicator rank for each department, which is

TABLE 1

RANKING OF DEPARTMENTS IN A SINGLE CLUSTER ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1979

Department in Cluster G	Percent Sections of Enrollment 10 or less[a]		Median Undergraduate Section Size[a]		Undergraduate FTE Students per Undergraduate FTE Faculty		Total Undergraduate Faculty Salary per Undergraduate Section[a]		Total Undergrad Faculty Salary per Undergrad Student Credit Hour	
	Rank	Percent	Rank	Size	Rank	Ratio	Rank	Ratio	Rank	Ratio
G 1	10.5	100.0%	10.5	2	11	2.3	3	$1,196	11	$153
G 2	7.5	71.4%	7	7	5	16.1	8	$1,862	9	$ 77
G 3	2	52.6%	3	9	7.5	13.1	2	$ 831	1	$ 19
G 4	9	88.9%	8	5	7.5	13.1	4	$1,320	4	$ 45
G 5	1	41.3%	1	16	2	18.1	7	$1,850	3	$ 38
G 6	7.5	71.4%	9	4	9	12.9	5	$1,327	5	$ 54
G 7	3	56.3%	3	9	6	13.9	11	$2,780	10	$ 92
G 8	4	59.4%	3	9	1	21.7	6	$1,407	2	$ 37
G 9	6	70.4%	5.5	8	4	16.5	9	$1,902	8	$ 64
G 10	10.5	100.0%	10.5	2	3	16.7	1	$ 371	6	$ 56
G 11	5	66.7%	5.5	8	10	12.1	10	$2,124	7	$ 61
Total		66.8%		7		15.3		$1,654		$ 67

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[a] For lecture, seminar, recitation, and laboratory/activity instruction types; excludes tutorial, auto-tutorial/independent study, and programmed instruction types

State University of New York at Buffalo
Office of Institutional Studies
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presented in Table 2. Given that the maximum possible standard deviation of mean rank for this department cluster is about 5, the standard deviations are high, confirming the inconsistency of the selected indicators for departments at a single point in time.

At the next level of aggregation, Table 3 displays the mean rank and standard deviation of department clusters in a single institution for each of five years. The mean rank of clusters over time appears at first to be generally stable. Stability should have been confirmed by the actual highest and lowest indicator values and ranks for each department cluster, which are presented in Table 4. However, the wide range of many yearly indicator values and ranks cast doubt on the stability of these indicators.

To summarize the variation of each department cluster's ranking over time, Table 5 displays each cluster's weighted five-year standard deviation of mean indicator rank, a statistic that adjusts for the smaller range of possible ranks in the earliest two years. Considering that the maximum possible standard deviation is about 5, the number of rather high standard deviations suggests that the selected indicators were not so stable after all.

It may be legitimately contended that high standard deviations do not suggest instability over time if the mean ranks change progressively in the same direction, demonstrating consistent increase or decrease in relative position. Examination of Table 3 reveals that three department clusters (B, G, and I) evidence such a progressive pattern; however, four other clusters with standard deviations higher than those three show erratic patterns of mean rank over the five years.

For four institutions as a whole, the most aggregated level studied, Table 6 displays the highest and lowest indicator values and ranks for each university over the five years. Given the limited possible ranks, the range of yearly indicator ranks and values for each university seems rather wide

TABLE 2

MEAN RANKING AND STANDARD DEVIATION OF DEPARTMENTS IN A SINGLE CLUSTER ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1979

Department in Cluster G	Mean Rank on Five Indicators	Standard Deviation
G 1	9.20	3.10
G 2	7.30	1.33
G 3	3.10	2.90
G 4	6.50	2.10
G 5	2.80	2.23
G 6	7.10	1.80
G 7	6.60	3.38
G 8	3.20	1.72
G 9	6.50	1.79
G 10	6.20	3.86
G 11	7.50	2.14

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TABLE 3

MEAN RANKING AND STANDARD DEVIATION OF DEPARTMENT CLUSTERS AT A SINGLE INSTITUTION ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1975 - Fall 1979

Department Cluster	Fall 1975		Fall 1976		Fall 1977		Fall 1978		Fall 1979	
	Mean Rank	Standard Deviation	Mean Rank	Standard Deviation	Mean Rank	Standard Deviation	Mean Rank	Standard Deviation	Mean Rank	Standard Deviation
A	6.00	2.19	7.40	.80	8.40	1.50	9.20	1.94	8.60	1.96
B	8.20	2.23	7.00	1.67	6.30	1.33	6.10	1.28	4.60	2.42
C	6.40	1.74	4.50	1.10	3.60	1.02	4.40	1.63	4.10	1.20
D[ab]	-	-	-	-	5.00	4.03	6.50	2.84	5.75	3.76
E	5.80	2.14	4.40	1.20	4.60	1.02	3.90	1.80	4.00	1.67
F	4.60	1.86	4.20	2.23	4.40	2.33	4.60	1.63	5.60	1.20
G	4.80	3.87	5.20	3.66	5.40	4.08	5.60	4.08	6.40	4.08
H	6.20	.75	7.20	2.93	7.80	1.47	8.50	2.00	7.20	.75
I	1.40	.80	2.20	2.40	2.60	2.25	3.20	2.64	4.20	3.06
J[b]	4.25	.83	8.13	2.70	9.63	1.85	7.25	2.49	9.13	3.24
K	6.20	3.49	4.40	1.86	7.00	2.76	5.30	2.82	5.20	3.19

[a] Department Cluster D was not established until Fall 1977

[b] Data not available for one indicator: Percent Sections of Enrollment 10 or Less

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TABLE 4

HIGHEST AND LOWEST YEARLY RANKING OF DEPARTMENT CLUSTERS IN A SINGLE INSTITUTION ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1975 - Fall 1979

Department Cluster	Percent Sections of Enrollment 10 or less[a]		Median Undergraduate Section Size[a]		Undergraduate FTE Students per Undergraduate FTE Faculty		Total Undergraduate Faculty Salary per Undergraduate Section[a]		Total Undergrad Faculty Salary per Undergrad Student Credit Hour	
	Highest rank	Lowest rank	Highest rank	Lowest rank	Highest rank	Lowest rank	Highest rank	Lowest rank	Highest rank	Lowest rank
A	6 (35.9%)	8 (53.5%)	8 (15)	10 (11)	7 (16.9)	11 (15.8)	2 ($4,412)	6 ($5,078)	6 ($62)	11 ($82)
B	2 (13.8%)	8 (45.8%)	6 (21)	9 (12)	7 (19.2)	10 (12.0)	3 ($3,493)	4 ($4,603)	3 ($50)	10 ($79)
C	2 (14.2%)	4 (19.5%)	3 (28)	7 (21)	3 (28.0)	5 (20.5)	5 ($4,259)	7 ($5,340)	4 ($44)	9 ($68)
D	-	-	1 (45)	2 (30)	1 (44.4)	5 (26.7)	10 ($9,260)	11 ($17,504)	6 ($52)	9 ($72)
E	3 (15.4%)	6 (20.4%)	4 (24)	7.5 (20)	1 (29.2)	6 (19.8)	3 ($3,201)	9 ($6,183)	3 ($41)	7 ($61)
F	3 (20.6%)	5 (21.7%)	2 (27)	5 (23)	2 (32.9)	5 (27.5)	7 ($6,478)	9 ($5,961)	3 ($38)	7 ($57)
G	9 (61.5%)	9 (63.8%)	10 (8)	11 (7)	2 (45.5)	9 (15.3)	1 ($1,185)	1 ($1,654)	1 ($27)	2 ($47)
H	2 (9.1%)	7 (39.4%)	6 (22)	8 (17)	6 (20.0)	10 (15.3)	6 ($4,847)	10 ($7,330)	5 ($51)	10 ($73)
I	1 (1.9%)	1 (5.3%)	1 (52)	2 (41)	1 (48.9)	4 (27.6)	3 ($4,459)	9 ($7,842)	1 ($22)	6 ($54)
J	-	-	3 (28)	6.5 (18)	3 (34.5)	11 (7.3)	5 ($4,827)	11 ($12,724)	4 ($41)	11 ($207)
K	2 (2.7%)	7 (34.5%)	2 (33)	9 (15)	6 (18.7)	10 (14.5)	2 ($2,272)	10 ($10,126)	1 ($36)	8 $62)

[a] For lecture, seminar, recitation, and laboratory/activity instruction types; excludes tutorial, auto-tutorial/independent study, and programmed instruction types

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TABLE 5

MEAN FIVE-YEAR RANKING AND WEIGHTED FIVE-YEAR STANDARD DEVIATION OF DEPARTMENT CLUSTERS AT A SINGLE INSTITUTION ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1975 - Fall 1979

Department Cluster	Five-year Mean Rank on Five Indicators	Weighted Five-year Standard Deviation of Mean Rank on Five Indicators
A	7.92	1.75
B	6.44	1.84
C	4.60	1.37
D[a]	5.75	3.88
E	4.54	1.62
F	4.68	1.89
G	5.48	3.96
H	7.38	1.78
I	2.72	2.36
J[b]	7.68	2.37
K	5.62	2.88

[a] Adjusted for the nonexistence of Department Cluster D in Fall 1975 and Fall 1976

[b] Data unavailable for one indicator: Percent Sections of Enrollment 10 or Less

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TABLE 6

HIGHEST AND LOWEST YEARLY RANKING OF FOUR UNIVERSITIES ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1975 - Fall 1979

University	Percent Sections of Enrollment 10 or less[a]		Median Undergraduate Section Size[a]		Undergraduate FTE Students per Undergraduate FTE Faculty		Total Undergraduate Faculty Salary per Undergraduate Section[a]		Total Undergrad Faculty Salary per Undergrad Student Credit Hour	
	Highest rank	Lowest rank	Highest rank	Lowest rank	Highest rank	Lowest rank	Highest rank	Lowest rank	Highest rank	Lowest rank
W	2 (16.6%)	3 (20.1%)	3 (29)	3 (31)	1 (23.6)	3 (22.3)	1 ($4,762)	2 ($4,269)	2 ($53)	3 ($55)
X	2 (16.9%)	3 (20.5%)	1.5 (36)	2 (22)	1 (23.7)	4 (20.4)	3 ($4,787)	4 ($6,004)	3 ($67)	4 ($63)
Y	1 (11.5%)	1 (16.3%)	1 (37)	1.5 (36)	2 (22.9)	4 (19.2)	3 ($5,183)	4 ($5,540)	1 ($62)	3 ($54)
Z	4 (28.6%)	4 (31.9%)	4 (28)	4 (16)	1 (25.5)	3 (21.9)	1 ($4,078)	2 ($5,233)	1 ($45)	4 ($68)

---

[a] For lecture, seminar, recitation, and laboratory/activity instruction types; excludes tutorial, auto-tutorial/independent study, and programmed instruction types

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for two indicators--student-faculty ratio and cost per credit hour. Summarizing institutional ranking variation over time, Table 7 displays each university's mean indicator rank for each of the five years and the five-year standard deviation of mean indicator rank. Given that the maximum possible standard deviation is about 2, for two universities the five-year standard deviations were rather high. Examination of the mean yearly indicator ranks of those two institutions reveals that while University Z demonstrated an initially stable but ultimately decreasing ranking pattern, University Y showed an erratic pattern over the five years. Thus, for at least one institution as a whole, the consistency and stability of the efficiency indicators were questionable.

Conclusions

These data suggest that even a complex system of precisely-defined unit course/section records has not yielded summary information that can easily be used to make clear judgments about the relative efficiency of instructional staff utilization--for a single year, a number of years, the department level, the department cluster level, or the institutional level. Although prudent management decisions should be based on appropriate data rather than on solely political or arbitrary bases, policy makers must exercise great caution in using comparative data to make resource allocation decisions that often have long-term effects.

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Mayhew, L. B. Surviving the eighties: Strategies and procedures for solving fiscal and enrollment problems. San Francisco, Ca.: Jossey-Bass, 1979.

TABLE 7

MEAN YEARLY AND FIVE-YEAR RANKING AND FIVE-YEAR STANDARD DEVIATION OF FOUR UNIVERSITIES ON FIVE INDICATORS OF UNDERGRADUATE INSTRUCTIONAL STAFF UTILIZATION

Fall 1975 - Fall 1979

	Mean Rank on Five Indicators						
University	**1975**	**1976**	**1977**	**1978**	**1979**	**Five-year Mean Rank on Five Indicators**	**Five-year Standard Deviation of Mean Rank on Five Indicators**
W	2.2	2.4	2.0	2.0	2.2	2.16	.72
X	2.8	3.2	3.2	3.2	2.3	2.94	.83
Y	2.6	2.0	2.4	2.4	2.1	2.30	1.21
Z	2.4	2.4	2.4	2.4	3.4	2.60	1.27

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TWO MULTILEVEL FACULTY RESOURCE ALLOCATION MODELS FOR STATE UNIVERSITY COLLEGES

Michael J. Oshier
University Systems Analyst
State University of New York at Brockport

Louis M. Spiro
Director, Analytic Studies
State University of New York at Brockport

In an era of declining enrollments, public institutions are under more pressure to justify programs and allocate resources efficiently. In New York, the State University Colleges are funded by an enrollment driven formula using Full Time Equivalent (FTE) students. It is necessary, therefore, to examine faculty allocations in terms of F.T.E. student production. This paper looks at two faculty allocation models. The first compares the number of faculty actually teaching with the number of faculty that can be supported by the student F.T.E.'s generated through instruction. The second model also includes the number of F.T.E. students generated through instruction, but in addition considers the number of faculty classroom contact hours as a means of recognizing programmatic differences. Both of these models are applied to the State University College system, individual campuses and specific departments over time to provide several different levels of comparisons and trends for resource allocation.

Data and Methodology

The source of information for both models is the Course and Section Analysis Report (CASA). This is a required and comparable report submitted by all State University Colleges to the Central Office in Albany that provides official and detailed data about all aspects of courses and instructors, including F.T.E. Faculty involved in instruction, weekly faculty class contact hours and F.T.E. students.

Model 1: Faculty Applied versus Faculty Generated

This is a supply/demand approach to the allocation process. The number of faculty applied to teaching is the total F.T.E. faculty participating in instruction as reported on the Course and Section Analysis Report. The number of faculty generated is determined by dividing the lower division student F.T.E.'s by 20; the upper division student F.T.E.'s by 18; and the graduate student F.T.E.'s by 12. The total faculty generated, therefore, takes into account the programmatic differences associated with the lower, upper and graduate course levels. The divisors of 20, 18 and 12 are those historically used as student/faculty ratios for the ratio shaping methodology of this model. The difference (Faculty Generated minus Faculty Applied) is an excellent indication of productivity and the balance between resources and student demand. Negative values suggest excess instructional capacity, while positive values imply the need for additional resources to meet the demand.

Table I contains an historical look at four SUNY Campuses. The table depicts that the four campuses represent two contrasting trends. Campuses seven (7) and one (1) show a trend that implies they are experiencing a decline in enrollment. At these two colleges, the difference between the faculty applied and generated has dropped dramatically since fall 1975. Comparing the trend of these two colleges with college four (4), you will see that college 4 also experienced a drop in the applied versus generated difference but initiated corrective action by reducing the number of faculty applied to teaching and/or increased their student F.T.E. production. It appears that college eleven (11) has also taken corrective action but they have been less successful in their attempt. One conclusion that can be drawn from this table is that SUNY should undertake a thorough analysis of colleges 1 and 7 in an attempt to reverse or stabilize their sharply declining productivity. In addition, they should conduct research on colleges 4 and 11 to determine how those colleges were able to stabilize or reverse their declining faculty productivity.

Table II analyzes the faculty applied versus generated differences of four academic departments at one SUNY College in the fall 79. The insight this table offers is the determination of which departments are above, below or equal to the expected productivity levels established by the College. Interpretations can also be made from this table on the faculty productivity differences at each of the course levels. A direct interpretation from this table is that the natural science department at this College is generating +0.25 faculty lines at the lower division while at the upper division they apply 6.28 more faculty than they generate. One hypothsis is that they have very few majors for the number of faculty applied. Another might be that there are many areas of expertise in the curriculum that must be covered and this necessitates additional faculty to assure a quality program.

Table III supplies information for a two level approach to the analysis of faculty productivity for a particular department. This table allows both a comparison of the differences among the campuses for each year and a trend comparison for the department across years. In the fall 1976, the twelve SUNY Colleges were clustered near the expected level of faculty productivity. The clustering of the colleges around the desired level suggests this was a well balanced program within the SUNY system. However,

TABLE I

FTE FACULTY APPLIED VERSUS GENERATED DIFFERENCE
FOUR SUNY CAMPUSES(total)
FALL'75 - FALL'79

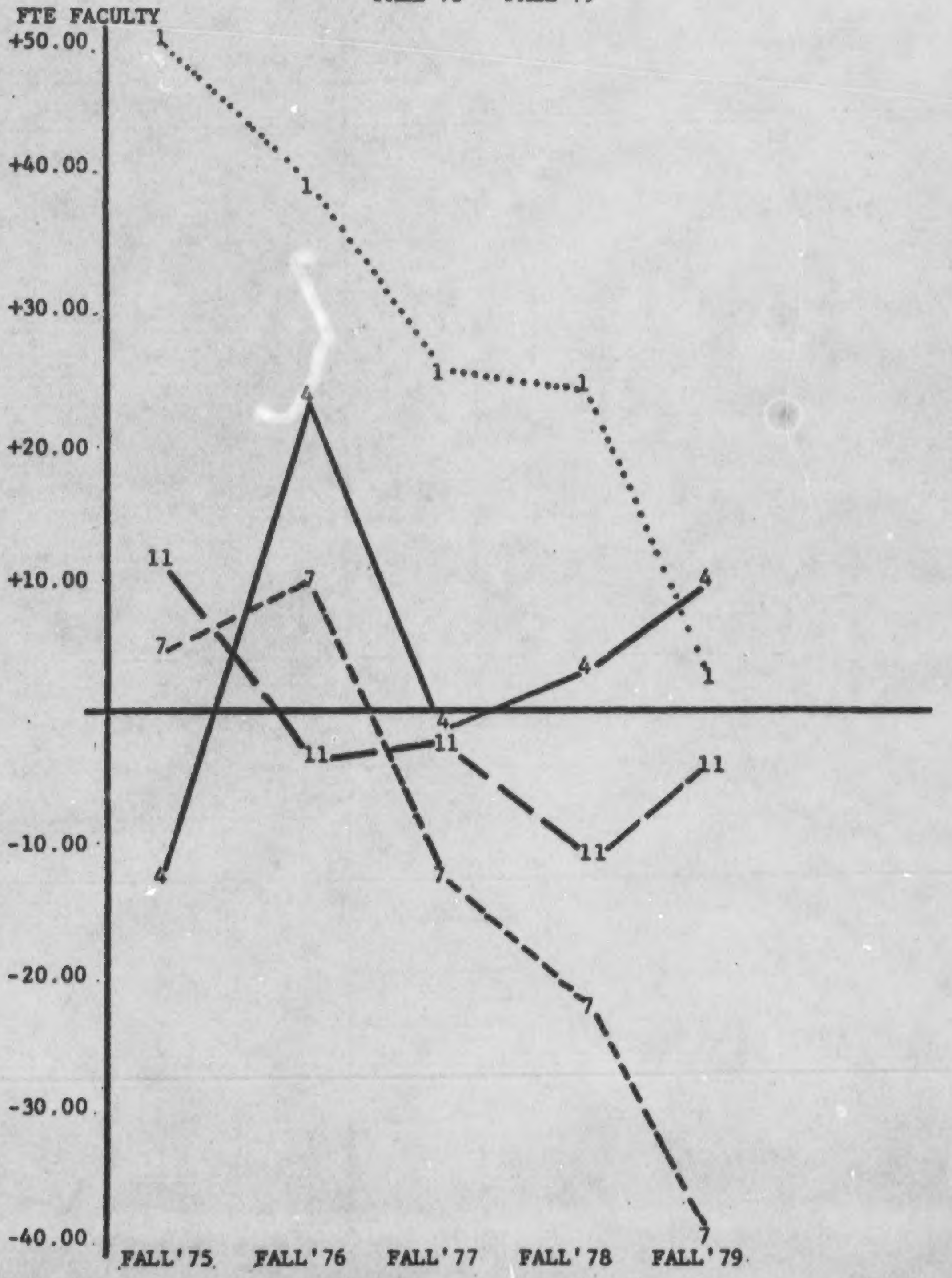


TABLE II

FTE FACULTY APPLIED VERSUS GENERATED DIFFERENCE FOUR DEPARTMENTS FROM ONE CAMPUS

FALL'79

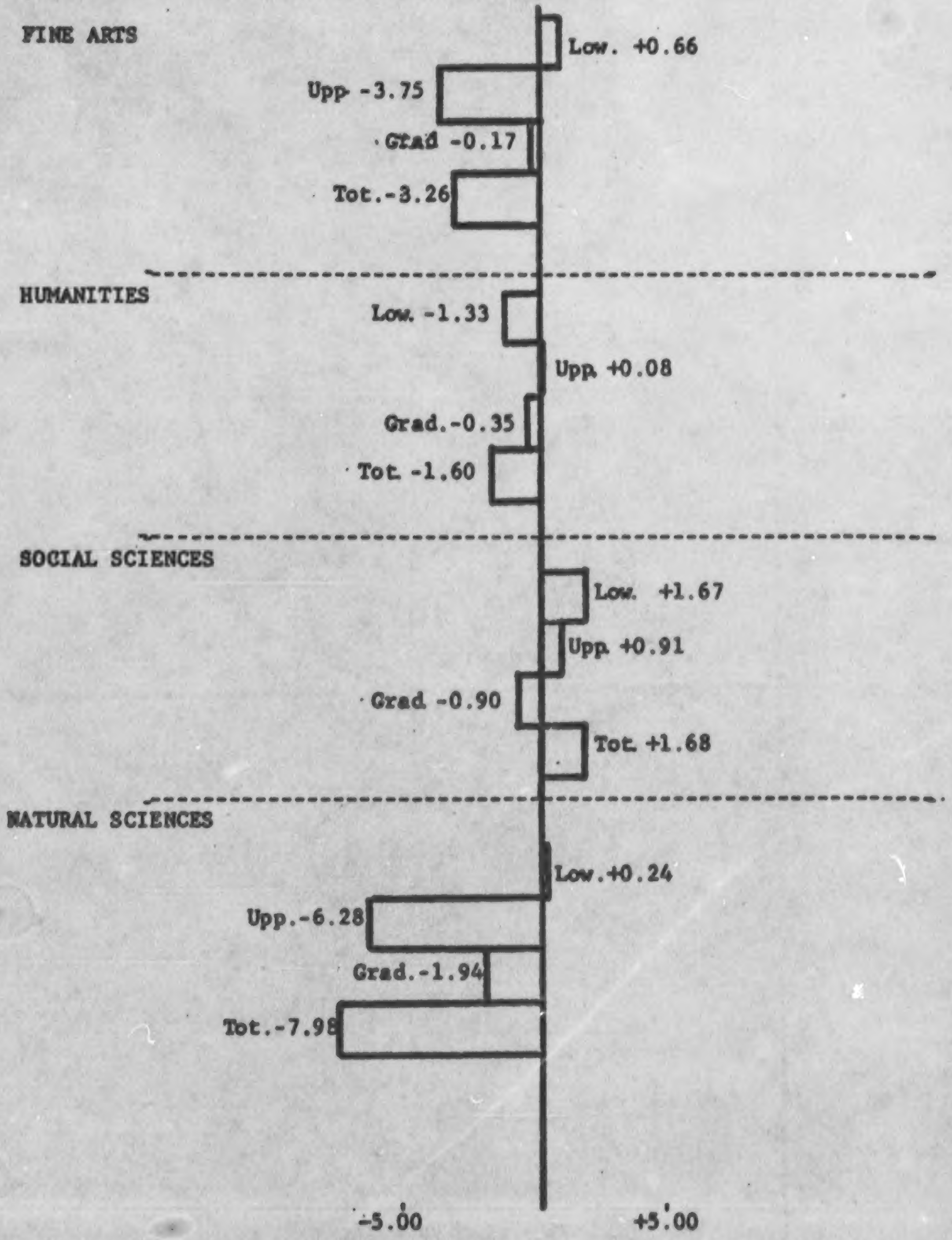


TABLE III

FTE FACULTY APPLIED VERSUS GENERATED DIFFERENCE
ALL SUNY CAMPUSES(total)
NATURAL SCIENCE DEPT.
FALL'76 - FALL'79

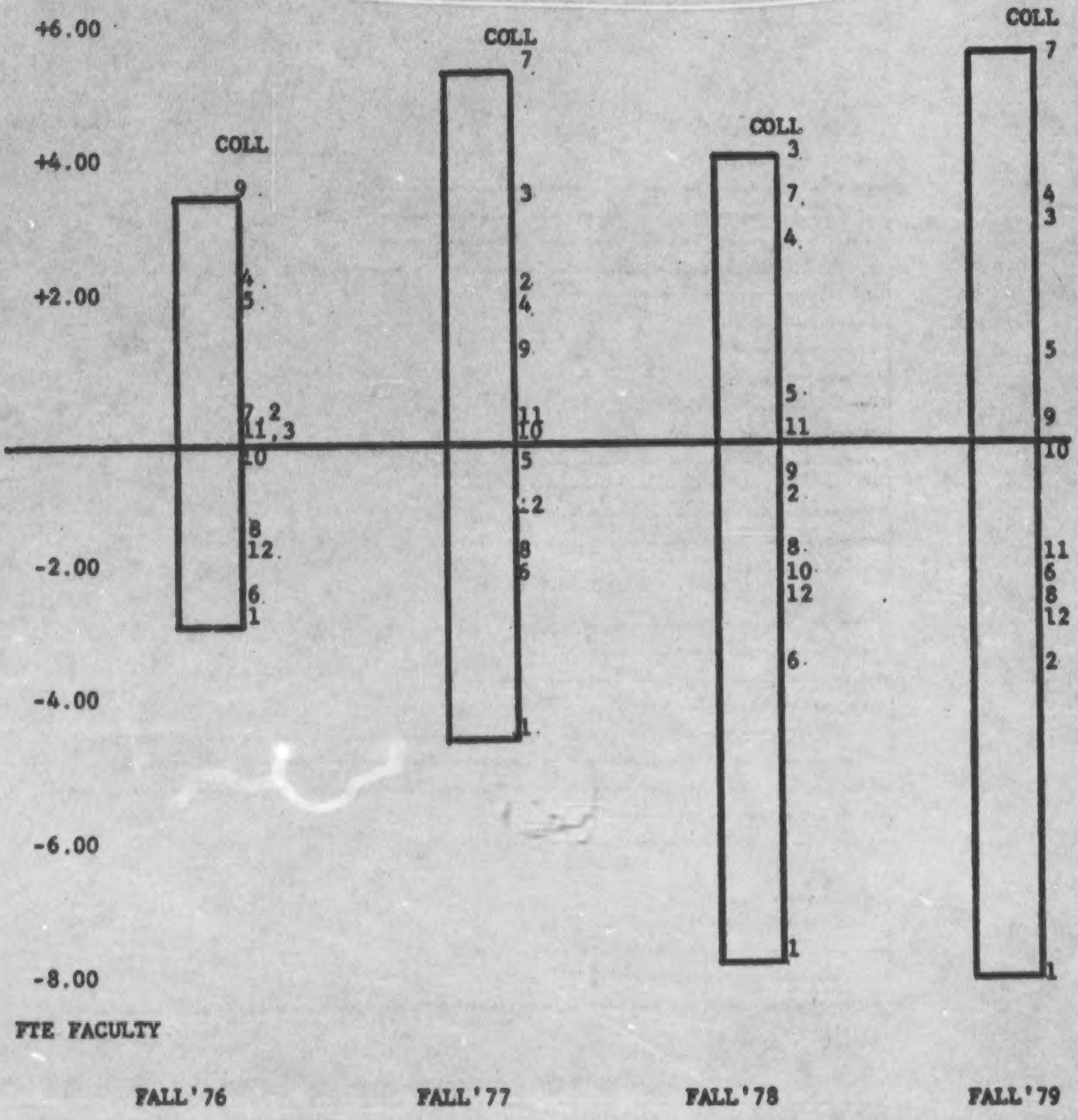
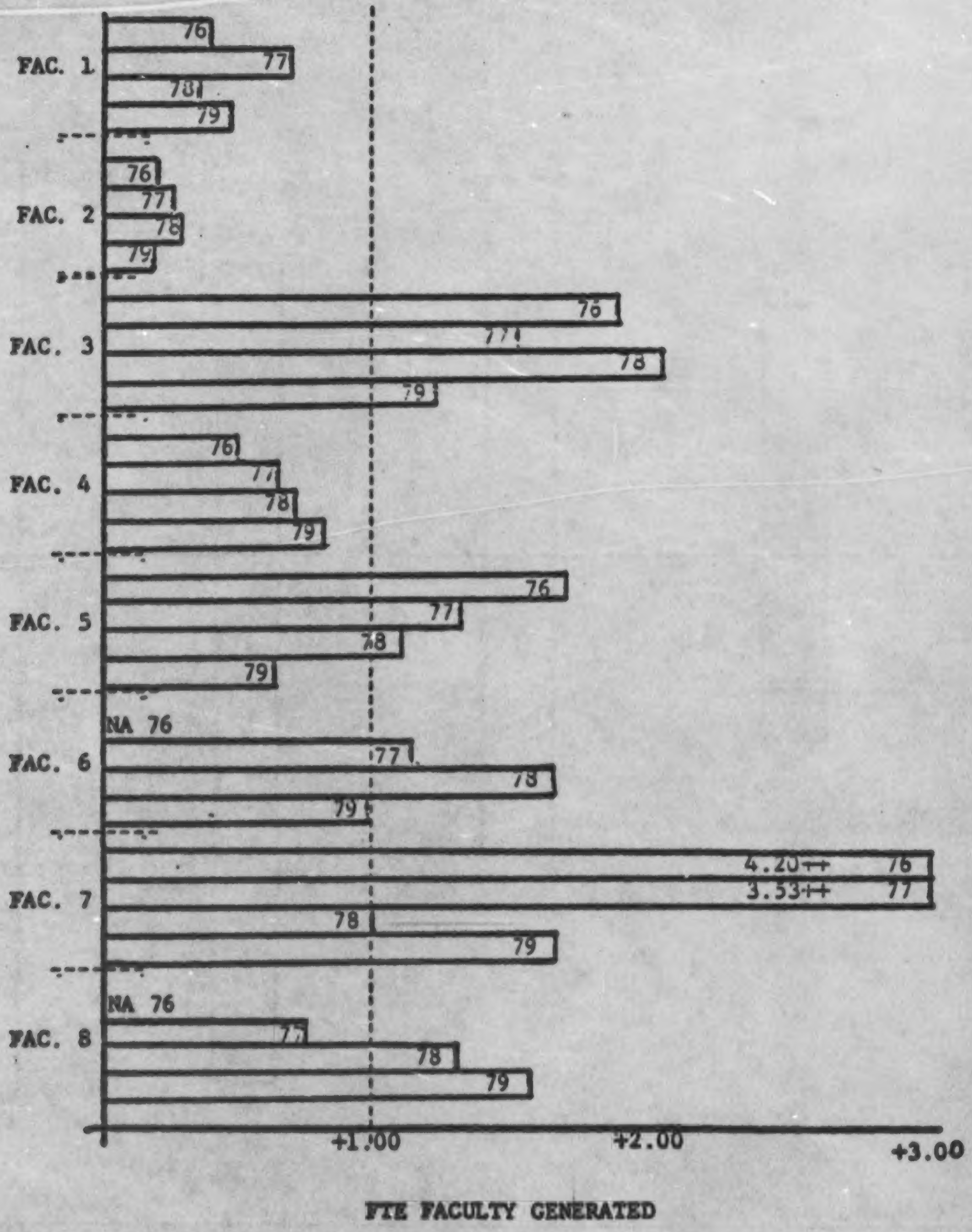


TABLE IV

FTE FACULTY GENERATED
BY INDIVIDUAL FACULTY MEMBER
FALL'76-FALL'79



as SUNY began experiencing declining enrollments in some of the colleges, the F.T.E. faculty applied versus generated difference began radiating outward from the expected level of productivity. As this widening of the differences among the Colleges was taking place, there was also a shift in the relative positioning of the Colleges on the table. These two occurrences lead to the speculation of whether or not SUNY should support this program at all of the Colleges or reallocate faculty among the campuses to achieve more efficient faculty utilization.

Table IV provides data for comparing faculty from one department over time. From this table, faculty can be analyzed for increasing, decreasing and stable productivity. In addition, faculty can be compared and, if necessary and applicable, reallocated to different areas within the department to help in the equalization of workload. For the unit chairperson in this department, research should be conducted on faculty members 1 and 2 to determine if they can be reassigned to assist faculty members 3 and 4. Another faculty member for which additional research should be conducted is faculty member 5. This research should determine why his/her productivity has declined sharply for four years and suggest alternate strategies for improving his/her productivity.

Model 2: Faculty Workload Model

This is a two dimensional graphic approach to resource allocation that considers faculty instructional effort as well as productivity in terms of student F.T.E.'s. The vertical axis of each graph represents the average number of student F.T.E.'s generated for each F.T.E. faculty member. The horizontal axis represents the average weekly faculty contact hours scheduled for each F.T.E. faculty member. In this way, programmatic differences resulting from different types of instruction and/or class size are apparent and serve to modify the results obtained through the supply/demand approach of model 1.

Table V provides an historical examination of three State University Colleges from 1975 to 1979. College A has had fairly narrow fluctuations in both F.T.E. students generated and Weekly Faculty Contact Hours over the past five years. College B showed a dramatic decrease in F.T.E. students coupled with a dramatic increase in Weekly Faculty Contact Hours between 1975 and 1976, followed by a sharp decrease in Weekly Faculty Contact Hours in 1977. College C has had a fairly consistent pattern of Weekly Faculty Contact Hours and a steadily decreasing F.T.E. student workload. These disparities between campuses need to be examined further to see if they result from programmatic differences, faculty workloads or enrollment difficulties.

Table VI shows the positioning of all State University Colleges on the Faculty Workload Matrix for Fall 1979. The scattered distribution has a range of from 12.5 to 21.0 F.T.E. students generated and from 12.0 to 17.0 Weekly Faculty Contact Hours. These differences should lead to an increased analysis of programmatic differences among campuses to see if valid reasons exist or if excess instructional capacity is evidenced. This might result in modified funding formulas if programmatic necessity was demonstrated as a major determinant of F.T.E. students generated.

Table VII analyzes the Biology Department of three State University Colleges from 1975 to 1979, and the changes are enormous. College A has had some mild changes in Weekly Faculty Contact Hours, but has had F.T.E. student production cut in half. College B has shown the opposite trend, with fairly low but consistent F.T.E. student production and sharp fluctuations

TABLE V

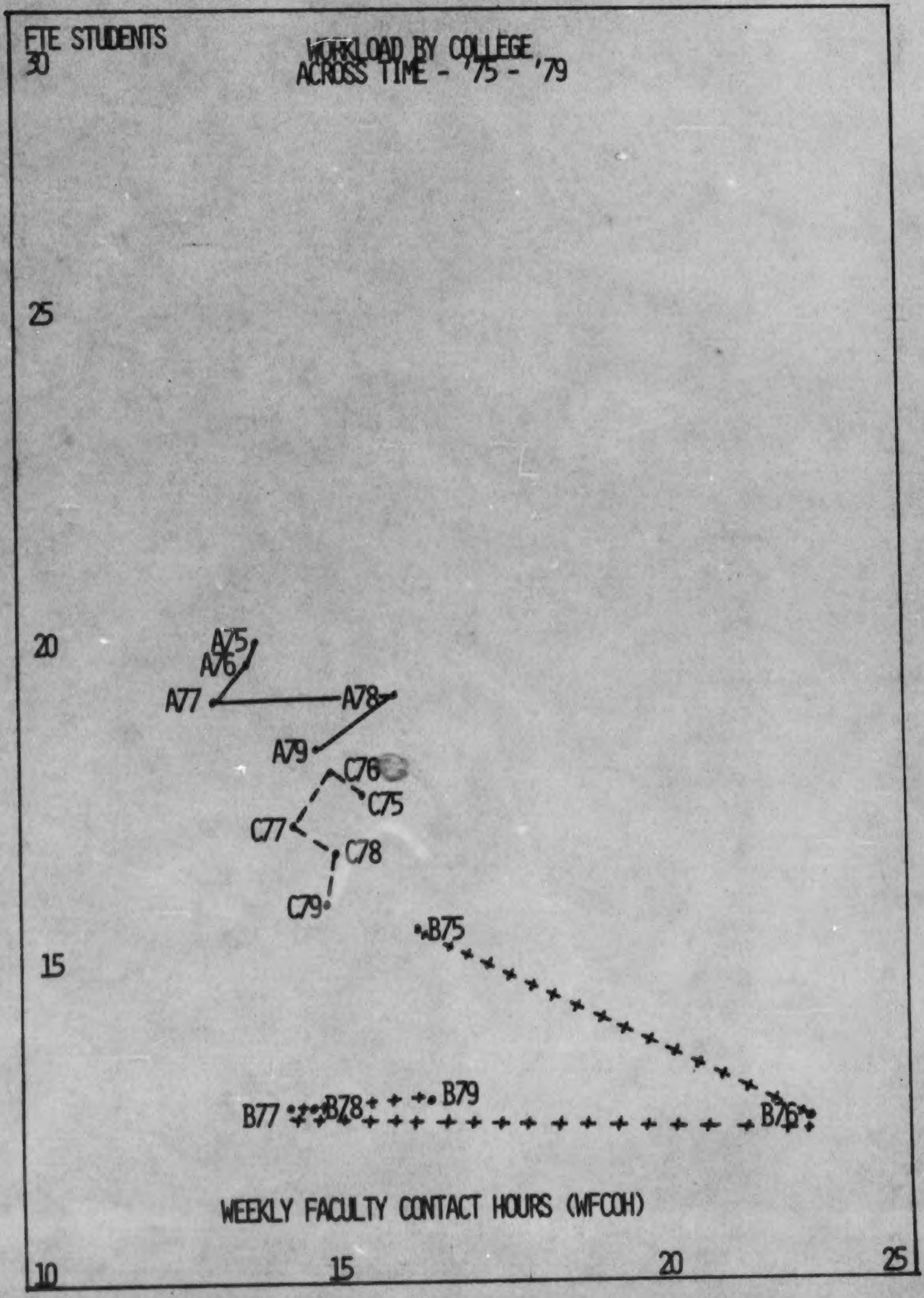

FTE STUDENTS
WORKLOAD BY COLLEGE
ACROSS TIME - '75 - '79
30
25
20
15
A75
A76
A77
A78
A79
C76
C75
C77
C78
C79
B75
B77
B78
B79
B76
WEEKLY FACULTY CONTACT HOURS (WFCOH)
10
15
20
25

TABLE VI

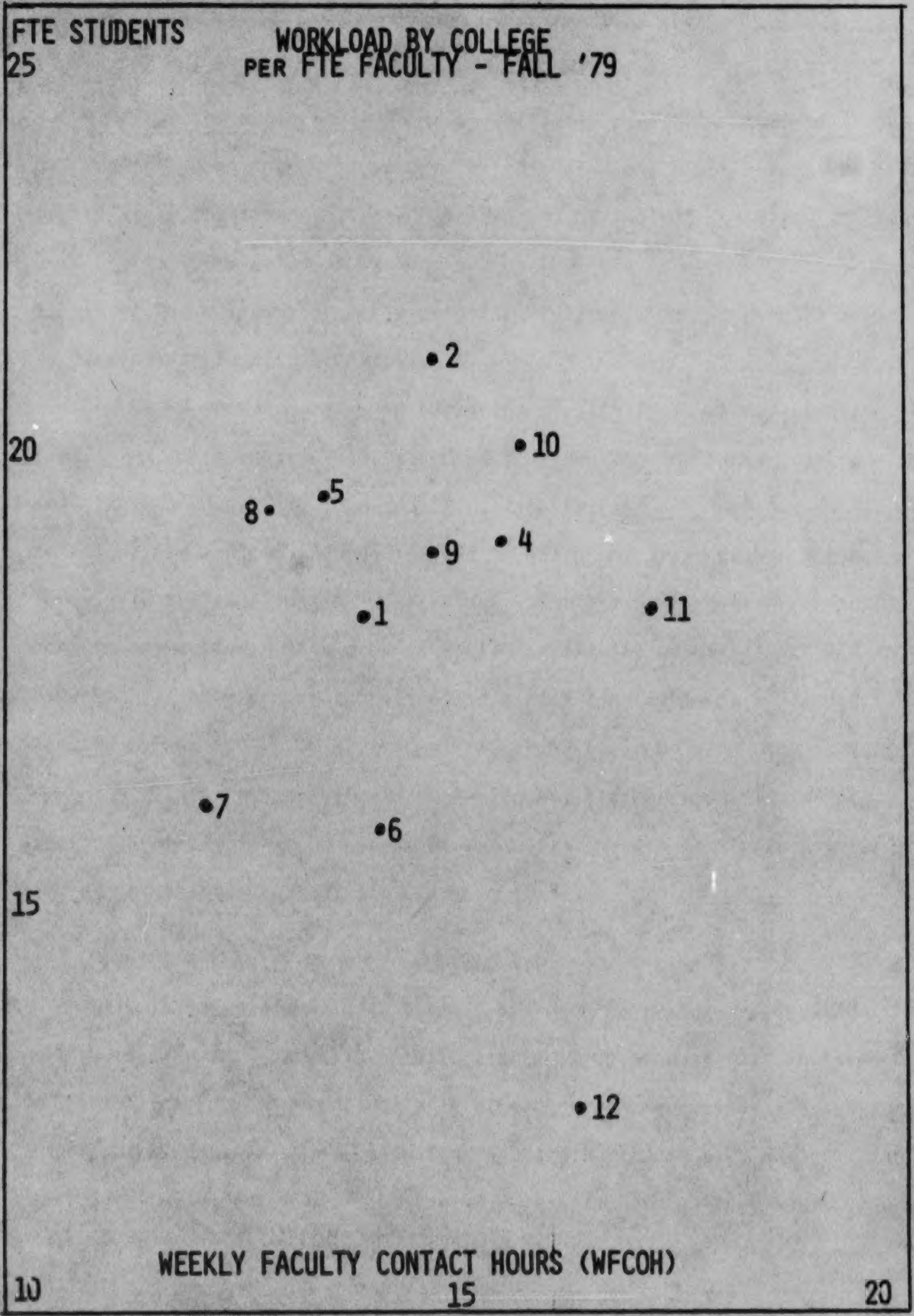

FTE STUDENTS
WORKLOAD BY COLLEGE
PER FTE FACULTY - FALL '79
25
20
15
10
15
20
WEEKLY FACULTY CONTACT HOURS (WFCOH)
2
10
5
8
9
4
1
11
7
6
12

TABLE VII

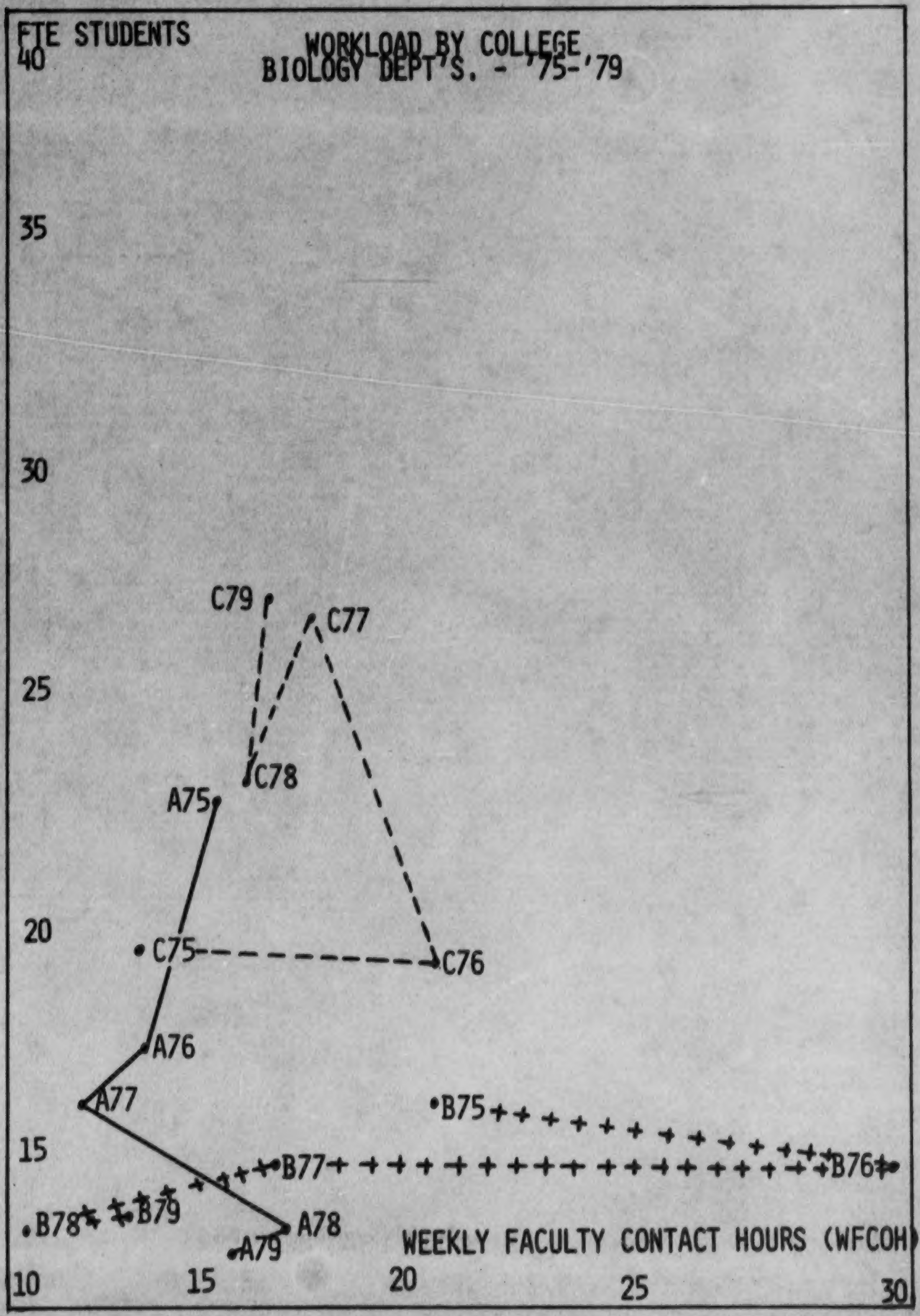
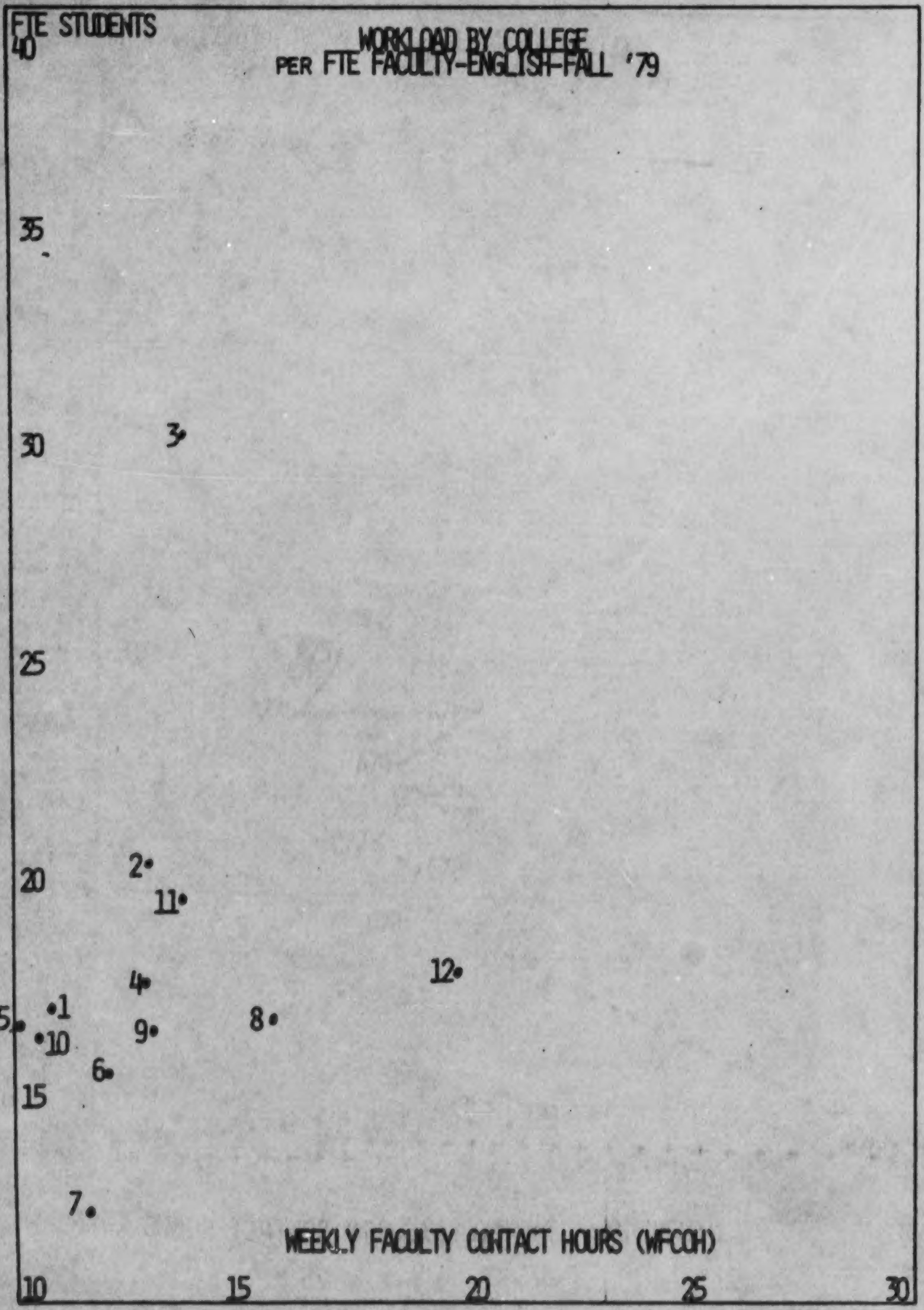

FTE STUDENTS
WORKLOAD BY COLLEGE,
BIOLOGY DEPT'S. - '75-'79
40
35
30
25
20
15
C79
C77
C78
A75
C75
C76
A76
A77
B75
B77
B76
B78
B79
A78
A79
WEEKLY FACULTY CONTACT HOURS (WFCOH)
10
15
20
25
30

TABLE VIII



WORKLOAD BY COLLEGE
PER FTE FACULTY-ENGLISH-FALL '79

in Weekly Faculty Contact Hours. College C has a more moderate trend of increasing F.T.E. student figures and somewhat lower Weekly Faculty Contact Hours. The magnitude of these changes must raise the possibility that not all of these programs should be continued, or that they should be substantially modified to reflect a more realistic instructional workload.

Table VIII illustrates all of the State University College English Departments for Fall 1979. The differences are surprising since instructional delivery should not be a contributing factor. Instead, it suggests that some programs may have few majors while others need more faculty, the typical problems of resource allocation and instructional quality.

Conclusion

These two faculty resource allocation models have been used to show trends in efficiency for the State University College system as a whole and for individual campuses. Selected departments and faculty have also been examined. If put to use on a recurring basis, these models would allow decision-makers to objectively consider the efficiency of previous and existing faculty allocation patterns, along with relative differences in productivity. The objective nature of the data, and the fact that it is comparable across institutions and departments, provides direction for increasing support, reallocating resources and decreasing support where necessary so that the system, the Colleges and the Academic Departments realistically face the future needs for higher education.

IDEAS ON INTERNAL USES OF FACULTY WORKLOAD DATA

Elizabeth A. Knapp
Director of Institutional Research
State University of New York at Binghamton

During the last ten years the call for accountability has been heard loudly and insistently by higher education. It affects both public and private institutions because the intense interest has come not only from legislators and auditors, but also from donors and the general public as well as internal constituencies. We in Institutional Research should be building the data base for good fiscal management. If and when our campuses are asked to justify faculty workloads, we will not be thrust into a rushed presentation of poorly conceived reports.

Let me suggest some questions for consideration before you design or redesign your "Faculty Teaching Load Analysis." It is not enough to simply list all of the courses taught by each instructor or department.

1. Who will use the report?

   Administrators, faculty or external agencies may have different interests and therefore the level of detail may vary.

2. Are there established guidelines on required teaching load on your campus that require special notation?

   For example, do two sections of the same course count the same as sections of two different courses?

3. What special situations or conditions exist on your campus that need to be considered in accumulating the data?
   a. Cross listed or simultaneously taught courses
   b. Courses of less than full semester duration

c. Courses taught by more than one instructor

d. Lecture section that carries the full credit for the course versus proration of credit across discussion and laboratory sections based on a formula that considers preparation time as well as class contact hours

e. Faculty with joint appointments

f. Teaching outside of budgeted department(s)

g. Thesis or dissertation sections separately identified

h. Undergraduate versus graduate level courses

The following presentation will show how the special situations in 3.a to h were addressed in the SUNY-Binghamton "Teaching Load Analysis" using the CASA file. The report is produced each major semester.

I. Each page heading includes the name of the instructor, department, rank and social security number as well as the budgeted FTE by department and rank.

II. The courses are sorted by day and by begin and end time to help identify courses taught at the same time by the same instructor. This allows the computer program to adjust the Weekly Faculty Contact Hours (WFCOH) to accurately represent the time the professor is in that classroom.

III. Special Situations

a. Display I -- Cross listed/simultaneously taught courses

Tuesday and Thursday from 11:40 to 13:05 AAA 196 and Hist 198C are taught at the same time by the same instructor; therefore, the enrollment for that class is 21 (instead of 7 and 14) and the WFCOH are reported for the first class only. The same situation is true for AAA 276 and Hist 328B except that the

History course is at the graduate level so the default to the accumulated level is graduate and the summary at the bottom of the page will include the total enrollment of 7 in the graduate column. This summary information will be discussed later in the paper.

b. Display II -- Courses less than full semester duration

The Monday/Wednesday classes from 16:40 to 18:05 are not treated in the same manner as the simultaneously taught courses in (a) above because each is taught only one half of the semester. MBA 343A is taught the first half as indicated by GAN in the Duration Code. This is a seven week (G) course starting the first week (A) in a 14-week (N) semester. The second half of the semester, the same instructor teaches MBA 344B with the coding GHN which shows a 7-week (G) course starting in the eighth week (H) in a 14-week (N) semester. The WFCOH are then prorated to one half a semester or 1.63 hours per week. The enrollments are unduplicated so there is no need to make any adjustments to the FTEs generated by these two credit courses.

c. Display III -- Courses taught by more than one instructor

The first and second course listings on this display show lecture sections 90 and 91 with the instructor responsible for 50% of each course. A similar report will appear on the listing for the other instructor in the course. Each faculty member receives only 50% of the credit hours generated and only half of the WFCOH generated by the course.

d. Display III -- Lecture section that carries full credit for the course

The campus does not prorate the credit across the discussion or laboratory sections of the course, therefore, the full credit is distributed between the two faculty members and no credits are assigned to the faculty in the sub-sections.

e. Display I -- Faculty with joint appointments
f. Display I -- Faculty teaching outside of budgeted department
h. Display I -- Undergraduate versus graduate level courses

This instructor is teaching in three departments--two of which are budgeted and the OCC courses are outside the department. The SUMMARY INFORMATION for this faculty member at the bottom of the Teaching Load was accumulated in the following manner:

===============

Classes with enrollment > 9 -- AAA 196/Hist 198C -- 21 UG
AA 105X -- 32 UG

Classes with enrollment <10 -- AAA 276/Hist 328B -- 7 GRAD

Independent Study (IT=5)
AAA 199/OCC 199 -- 10 UG

(Note: On Display II, each half-semester course counted as .5)

===============

Number prime sections -- All courses are accumulated by level

This faculty member did not teach discussion/lab sections

===============

Unique courses within Dept 1 -- Hist 196C (UG), Hist 328B (GR)

Unique courses within Dept 2 -- AAA 196, AAA 276, AAA 105X (UG)

AAA 199 -- Independent Study (UG)

Unique courses outside Dept -- OCC 199 -- Independent Study (UG)

===============

===============

Weekly Faculty Contact Hours -- accumulated by UG/GRAD and
equal to WFCOH in last column

===============

Student Credit Hours Excl G2 -- Accumulated by course level
G2 Student Credit Hours -- Accumulated by course level

===============

Using Display I as an example -- the credits are distributed to the departments as follows: 80 credit hours of History courses will be added to History and 164 for Afro-American courses will be added to that department because both match budgeted departments. The 36 OCC credits will be distributed proportionately to the two budgeted departments -- 50% or 18 credits to each department. Display IV is the Teaching Load Summary for all faculty budgeted to a department.

The FTEs from Display IV are used in Part II of Section F and G of the Annualized Academic Workload/Resource Profile (Display V). This shows the comparison of the workload of the courses offered by the department with the workload of the budgeted faculty of the department.

```
05/21/80                                   TEACHING LOAD ANALYSIS                        FALL          PAGE

                                                            UP30 ACCOUNTING BLOCKS
                                                            DEPT    FTE   TITLE CODE ALBANY TITLE
RANK ASST PROFESSOR                                         80046   .50     420     ASSISTANT PROFESSOR-10 MONTHS
SSN                                                         86006   .50     420     ASSISTANT PROFESSOR-10 MONTHS

*******************************************************************************************************************************
                        DURA- COURSE                                               ENROLLMENT              RES-    CR   FTE GENERATED
                        TION  DEPT    DEPT         COURSE         INST   CR                          ADV  PONSI-  HRS  LESS ADV DOC
   DAYS        TIMES    CODE  CODE    NAME         NUMBER  SEC  TYP LVL  VAL  TOT    LD  UD  PRF  MAS  DOC  BILITY  GEN    REG     WGTD     WFCOH
*******************************************************************************************************************************
   T R  ** 11:40-13:05  NAN  86006   AAA           196     01    1   U    4    7     2   5                   1.00   28   1.866    2.071    3.260
   T R  ** 11:40-13:05  NAN  80046   HIST          198C    01    1   U    4   14     6   8                   1.00   56   3.733    4.143     .000
   T R  **#14:50-16:20  NAN  86006   AAA           276     01    1   U    4    1     1                       1.00    4    .266     .295    3.260
   T R  ** 14:50-16:20  NAN  80046   HIST          328A    01    1   G    4    6         1        4    1     1.00   24   1.666    2.782     .000
   T R     16:25-17:50  NAN  86006   AAA           105X    01    1   L    4   32    32                       1.00  128   8.533    8.533    3.260
               ARRANGED  NAN  86006   AAA           199     06    5   U    4    1         1                   1.00    4    .266     .295     .990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    1         1                   1.00    4    .266     .295     .990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    1         1                   1.00    4    .266     .295     .990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    1         1                   1.00    4    .266     .295     .990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    1     1                       1.00    4    .266     .295     .990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    2         2                   1.00    8    .533     .591    1.990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    2         2                   1.00    8    .533     .591    1.990
               ARRANGED  NAN  86061   OCC           199     01    5   U    4    1         1                   1.00    4    .266     .295     .990
                                                                               ---   ---  ---  ---  ---  ---         ---   ------   ------   ------
                    TOTALS                                                      70    42   23    0    4    1         280   18.726   20.776   19.700
*******************************************************************************************************************************
*******************************************************************************************************************************


              *******************************************************************************************************************
                                                 NON-INDEPENDENT STUDY        INDEPENDENT STUDY              TOTALS
                                                 UG      GRAD    TOTAL       UG      GRAD    TOTAL       UG      GRAD    TOTAL
              *******************************************************************************************************************
              NUMBER CLASSES WITH ENROLLMENT > 9   2.00             2.00                                    2.00             2.00
              NUMBER CLASSES WITH ENROLLMENT < 10  ______   1.00     1.00     10.00   ______   10.00     10.00     1.00    11.00
                           TOTAL NUMBER CLASSES    2.00     1.00     3.00     10.00            10.00     12.00     1.00    13.00
              *******************************************************************************************************************
              NUMBER PRIME SECTIONS                4.00     1.00     5.00     10.00            10.00     14.00     1.00    15.00
              NUMBER OTHER SECTIONS               ______   ______   ______   ______   ______   ______    ______   ______   ______
                          TOTAL NUMBER SECTIONS    4.00     1.00     5.00     10.00            10.00     14.00     1.00    15.00
              *******************************************************************************************************************
              NUMBER UNIQUE COURSES WITHIN DEPT 1  1.00     1.00     2.00                                  1.00     1.00     2.00
              NUMBER UNIQUE COURSES WITHIN DEPT 2  3.00              3.00      1.00             1.00      4.00              4.00
              NUMBER UNIQUE COURSES OUTSIDE DEPTS                              9.00             9.00      9.00              9.00
              NUMBER THESIS/DISSERTATION COURSES  ______   ______   ______   ______   ______   ______    ______   ______   ______
                          TOTAL UNIQUE COURSES     4.00     1.00     5.00     10.00            10.00     14.00     1.00    15.00
              *******************************************************************************************************************
              WEEKLY FACULTY CONTACT HOURS         9.78              9.78      9.92             9.92     19.70             19.70
              *******************************************************************************************************************
              STUDENT CREDIT HOURS EXCLUDING G2  216.00    20.00   236.00     40.00            40.00    256.00    20.00   276.00
              G2 STUDENT CREDIT HOURS             ______    4.00     4.00    ______   ______   ______    ______    4.00     4.00
                   TOTAL STUDENT CREDIT HOURS    216.00    24.00   240.00     40.00            40.00    256.00    24.00   280.00
              *******************************************************************************************************************

 * = CROSS LISTING
** = SIMULTANEOUS TAUGHT
 # = UG/GRAD SIMULTANEOUSLY TAUGHT
```

DISPLAY I

```
     05/21/80                                  TEACHING LOAD ANALYSIS                           FALL          PAGE

                                                             UP30 ACCOUNTING BLOCKS
   SCHOOL OF MANAGEMENT                                      DEPT   FTE    TITLE CODE ALBANY TITLE
   RANK ASST PROFESSOR                                       44014  1.00       420    ASSISTANT PROFESSOR-10 MONTHS
   SSN

  ******************************************************************************************************************
                          DURA- COURSE                                          ENROLLMENT              RES-    CR   FTE GENERATED
                          TION  DEPT    DEPT          COURSE        INST   CR                                ADV PONSI- HRS  LESS ADV DOC
     DAYS         TIMES   CODE  CODE    NAME          NUMBER SEC TYP LVL  VAL TOT    LD   UD   PRF   MAS  DOC RILITY GEN   REG        WGTD      WFCOH
  ******************************************************************************************************************
    M W F   14:20-15:20 NAN  44014   MGMT           111    90    1   L    4  116    76   39          1        1.00  464  30.933   30.933    3.260
    M W     16:40-18:05 GMN  44014   MBA            344B   01    1   G    2    9                     9        1.00   18   1.500    2.505    1.630
    M W     16:40-18:05 GAN  44014   MBA            343A   01    1   G    2   27                    27        1.00   54   4.500    7.515    1.630
      W     15:30-16:30 NAN  44014   MGMT           111    05    3   L    0   17     8    9                   1.00    0    .000     .000    1.090
                                                                            ---   ---  ---   ---   ---  ---          ---  ------   ------   ------
                          TOTALS                                            169    84   48     0    37    0          536  36.933   40.953    7.610
  ******************************************************************************************************************
  ******************************************************************************************************************


                 **********************************************************************************************************
                                                        NON-INDEPENDENT STUDY        INDEPENDENT STUDY              TOTALS
                                                        UG      GRAD    TOTAL       UG      GRAD    TOTAL       UG      GRAD    TOTAL
                 **********************************************************************************************************
                  NUMBER CLASSES WITH ENROLLMENT > 9    2.00     .50     2.50                                   2.00     .50     2.50
                  NUMBER CLASSES WITH ENROLLMENT < 10   ------   .50      .50      ------  ------  ------       ------   .50      .50
                           TOTAL NUMBER CLASSES         2.00    1.00     3.00                                   2.00    1.00     3.00
                 **********************************************************************************************************
                  NUMBER PRIME SECTIONS                 1.00    1.00     2.00                                   1.00    1.00     2.00
                  NUMBER OTHER SECTIONS                 1.00   ------    1.00      ------  ------  ------       1.00   ------    1.00
                          TOTAL NUMBER SECTIONS         2.00    1.00     3.00                                   2.00    1.00     3.00
                 **********************************************************************************************************
                  NUMBER UNIQUE COURSES WITHIN DEPT 1   1.00    2.00     3.00                                   1.00    2.00     3.00
                  NUMBER UNIQUE COURSES OUTSIDE DEPTS
                  NUMBER THESIS/DISSERTATION COURSES    ------  ------  ------     ------  ------  ------       ------  ------  ------
                           TOTAL UNIQUE COURSES         1.00    2.00     3.00                                   1.00    2.00     3.00
                 **********************************************************************************************************
                  WEEKLY FACULTY CONTACT HOURS          4.35    3.26     7.61                                   4.35    3.26     7.61
                 **********************************************************************************************************
                  STUDENT CREDIT HOURS EXCLUDING G2   464.00   72.00   536.00                                 464.00   72.00   536.00
                  G2 STUDENT CREDIT HOURS              ------  ------  ------     ------  ------  ------       ------  ------  ------
                        TOTAL STUDENT CREDIT HOURS    464.00   72.00   536.00                                 464.00   72.00   536.00
                 **********************************************************************************************************

     * = CROSS LISTING
    ** = SIMULTANEOUS TAUGHT
     # = UG/GRAD SIMULTANEOUSLY TAUGHT
```

DISPLAY II

```
    05/21/80                              TEACHING LOAD ANALYSIS                              FALL        PAGE

                                                              UP30 ACCOUNTING BLOCKS
                                                              DEPT    FTE    TITLE CODE ALBANY TITLE
  RANK ASST PROFESSOR                                         80007  1.00        420     ASSISTANT PROFESSOR-10 MONTHS
  SSN

  ****************************************************************************************************************
                      DURA- COURSE                                         ENROLLMENT                 RES-   CR   FTE GENERATED
                      TION  DEPT   DEPT       COURSE       INST   CR                                 ADV PONSI- HRS  LESS ADV DOC
    DAYS      TIMES   CODE  CODE   NAME       NUMBER SEC TYP LVL VAL  TOT    LD   UD  PRF  MAS  DOC BILITY GEN     REG      WGTD     WFCOH
  ****************************************************************************************************************
    M W F  10:50-11:50 NAN  80007  ANTHRO      111    90   1   L   4  224   200   24                    .50  448  29.866   29.866    1.630
    M W F  12:00-13:00 NAN  80007  ANTHRO      111    91   1   L   4  181   163   18                    .50  362  24.133   24.133    1.630
     T R   10:05-13:05 NAN  80007  ANTHRO      342    01   2   G   4   10          1        2    7   1.00   40   1.000    1.670    6.530
             ARRANGED  NAN  80007  ANTHRO      397    09   5   G   2    1                   1         1.00    2    .166     .277     .990
             ARRANGED  NAN  80007  ANTHRO      499    13   5   G   4    1                        1   1.00    4    .000     .000    1.990
             ARRANGED  NAN  80007  ANTHRO      499    13   5   G   1    1                        1   1.00    1    .000     .000    1.990
             ARRANGED  NAN  80007  ANTHRO      399    13   5   G   4    1                        1   1.00    4    .000     .000     .990
             ARRANGED  NAN  80007  ANTHRO      399    13   5   G   1    1                        1   1.00    1    .000     .000     .990
                                                                      ---   ---  ---  ---  ---  ---          ---  ------   ------   ------
                 TOTALS                                               420   363   43    0    3   11          862  55.165   55.946   16.740
  ****************************************************************************************************************
  ****************************************************************************************************************


         ************************************************************************************************************
                                               NON-INDEPENDENT STUDY       INDEPENDENT STUDY              TOTALS
                                               UG      GRAD    TOTAL     UG      GRAD    TOTAL     UG      GRAD    TOTAL
         ************************************************************************************************************
         NUMBER CLASSES WITH ENROLLMENT > 9    1.00    1.00     2.00                               1.00    1.00     2.00
         NUMBER CLASSES WITH ENROLLMENT < 10   ------  ------  ------  ------   5.00     5.00    ------    5.00     5.00
                  TOTAL NUMBER CLASSES         1.00    1.00     2.00            5.00     5.00     1.00    6.00     7.00
         ************************************************************************************************************
         NUMBER PRIME SECTIONS                 1.00    1.00     2.00            5.00     5.00     1.00    6.00     7.00
         NUMBER OTHER SECTIONS                 ------  ------  ------  ------  ------   ------   ------  ------   ------
                 TOTAL NUMBER SECTIONS         1.00    1.00     2.00            5.00     5.00     1.00    6.00     7.00
         ************************************************************************************************************
         NUMBER UNIQUE COURSES WITHIN DEPT 1   1.00    1.00     2.00            1.00     1.00     1.00    2.00     3.00
         NUMBER UNIQUE COURSES OUTSIDE DEPTS
         NUMBER THESIS/DISSERTATION COURSES    ------  ------  ------  ------   4.00     4.00    ------    4.00     4.00
                  TOTAL UNIQUE COURSES         1.00    1.00     2.00            5.00     5.00     1.00    6.00     7.00
         ************************************************************************************************************
         WEEKLY FACULTY CONTACT HOURS          3.26    6.53     9.79            6.95     6.95     3.26   13.48    16.74
         ************************************************************************************************************
         STUDENT CREDIT HOURS EXCLUDING G2   810.00   12.00   822.00            2.00     2.00   810.00   14.00   824.00
         G2 STUDENT CREDIT HOURS               ------  28.00   28.00   ------  10.00    10.00    ------   38.00    38.00
              TOTAL STUDENT CREDIT HOURS     810.00   40.00   850.00           12.00    12.00   810.00   52.00   862.00
         ************************************************************************************************************

     * = CROSS LISTING
    ** = SIMULTANEOUS TAUGHT
     # = UG/GRAD SIMULTANEOUSLY TAUGHT
```

DISPLAY III

```
05/02/80                          TEACHING LOAD ANALYSIS                  FALL                PAGE
 800                                      SUMMARY

          ===========================================================================================
                                          CREDIT HOURS GENERATED
                       ----------------------------------------------------------------------------
            LEVEL                            LEVEL OF STUDENT                                     TOTALS
          OF COURSE    ---------------------------------------------------------------  ---------------------
                         LOWER      UPPER       ALL                                ALL    INCLUDING  EXCLUDING
                       DIVISION   DIVISION    U-GRAD     MASTERS    DOCTORAL   GRADUATE   DOCTORAL   DOCTORAL
          -----------  ---------------------------------------------------------------  ---------------------
          LOWER DIVISION  1203.00     320.00   1523.00                                      1523.00    1523.00
          UPPER DIVISION  2201.20    3376.80   5578.00     14.00                 14.00      5592.00    5592.00
            TOTAL U-GRAD  3404.20    3696.80   7101.00     14.00                 14.00      7115.00    7115.00
            ALL GRADUATE               36.00     36.00    268.00     196.00     464.00       500.00     304.00
             GRAND TOTAL  3404.20    3732.80   7137.00    282.00     196.00     478.00      7615.00    7419.00
          ===========================================================================================

                         =============================================
                                          STUDENT     FACULTY     STU/FAC
                                            FTE         FTE        RATIO
                         ---------------------------------------------
                         LOWER DIVISION    101.53
                         UPPER DIVISION    372.80
                           TOTAL U-GRAD    474.33
                         MASTERS            25.33
                         DOCTORAL           56.25
                             TOTAL GRAD     81.58
                            GRAND TOTAL    555.91       24.51      22.681
                         =============================================
```

DISPLAY IV

PRODUCT: WP002

SCHOOL/DEPARTMENT :

STATE UNIVERSITY OF NEW YORK AT BINGHAMTON
ANNUALIZED SCHOOL OR DEPARTMENTAL WORKLOAD/RESOURCE PROFILE

PAGE:
DATE: 11/28/79

		1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
SECTION A - STATE RESOURCES						
A- 1. FTEFAC LINES ALLOCATED (EXCLUDES A- 4)		18.18	19.9	19.5	18.2	20.25
A- 2. FTEFAC LINES FILLED (EXCLUDES A- 4)		18.18	19.9	19.5	18.2	20.25
A- 3. FTEFAC TEACHING ASSISTANT LINES FILLED		3.5	3.75	2.5	2.38	2.25
A- 4. FTEFAC SPECIAL PROVOST TEACHING ASST LINES FILLED						
A- 5. SUPPORT FTE		3.15	4	4	4	3.5
A- 6. GRADUATE ASSISTANT FTE		2.35	2.15	1.87	1.38	1.5
A- 7. FACULTY SALARIES	$	265,263	311,678	330,575	353,769	405,051
A- 8. TEACHING ASSISTANT SALARIES	$	35,000	38,310	27,000	24,750	23,450
A- 9. SPECIAL PROVOST TEACHING ASSISTANT SALARIES	$					
A-10. SPECIAL PROVOST ALLOCATION: T A	$				3,050	3,150
A-11. SUPPORT SALARIES	$	37,031	41,903	42,016	46,731	44,641
A-12. GRADUATE ASSISTANT SALARIES	$	23,485	21,500	18,720	14,775	17,000
A-13. SPECIAL PROVOST ALLOCATION: G A	$				1,750	600
A-14. ADDITIONAL SUPPORT	$	18,835	20,023	30,746	19,971	20,312
A-15. ADMINISTRATIVE SUPPORT	$	24,288	24,917	23,421	27,045	23,952
A-16. SPECIAL ALLOCATIONS AND TEMPORARY SERVICE	$			1,431	2,525	4,091
A-17. TOTAL DEPARTMENTAL SUPPORT	$	403,902	459,331	473,907	495,166	542,247
A-18. COMPUTER SUPPORT	$	2,000	2,500	3,040	3,566	9,466
A-19. TOTAL DEPARTMENTAL SUPPORT WITH COMPUTER	$	405,902	461,831	476,947	498,732	551,713
A-20. STATE FELLOWSHIP FUNDS	$			1,200	18,900	17,550
SECTION B - OTHER CHARACTERISTICS						
B- 1. TENURE COMMITMENT HEADCOUNT		8	9	10	11	11
B- 2. NON-TENURED FACULTY (FULL-TIME) HEADCOUNT		9	11	9	7	10
B- 3. AFFIRMATIVE ACTION FACULTY HEADCOUNT		2	5	4	4	4
B- 4. AFFIRMATIVE ACTION GRADUATE STUDENTS		3	6	52	54.5	51
B- 5. TEACHING ASSISTANT HEADCOUNT		16	20	10.5	11	9.5
B- 6. SPECIAL PROVOST TEACHING ASSISTANT HEADCOUNT						
B- 7. GRADUATE ASSISTANT HEADCOUNT		14	9	10	5.5	6
B- 8. GRADUATE STUDENT STATE-SUPPORTED FELLOWSHIPS				.5	6	5.6
SECTION C - OUTSIDE SUPPORT						
C- 1. PROPOSALS SUBMITTED		14	9	39	27	30
C- 2. PROJECTS FUNDED		2	9	28	19	33
C- 3. PERSONNEL WITH OUTSIDE GRANTS		5	13	12	10	11
C- 4. GRANT EXPENDITURES	$	203,858	274,795	188,006	265,934	162,583
C- 5. GRADUATE STUDENTS - DIRECT SUPPORT				3.5	4.5	3.5
C- 6. GRADUATE STUDENT DIRECT SUPPORT FUNDS	$			10,440	16,320	14,290
C- 7. GRADUATE STUDENTS - RESEARCH FOUNDATION SUPPORT				15.5	23.5	15.3
C- 8. GRADUATE STUD RESEARCH FOUNDATION SUPPORT FUNDS	$			44,824	67,741	52,549
C- 9. GRADUATE STUDENTS - OTHER SUPPORT			1			
C-10. GRADUATE STUDENT - OTHER SUPPORT FUNDS	$					
SECTION D - DEPARTMENT/SCHOOL HEADCOUNT						
D- 1. UNDERGRADUATE MAJORS		119	86	71	51	49
D- 2. UNDERGRADUATE MAJORS--PRORATED FOR DOUBLE MAJORS		119	79	63	44	42
D- 3. UNDERGRADUATE UNDECLARED MAJORS						
D- 4. UNDERGRADUATE NON-MATRICULANTS						
D- 5. TOTAL UNDERGRADUATE STUDENTS		119	79	63	44	42
D- 6. GRADUATE MAJORS		86	88	100	110	120
D- 7. GRADUATE MAJORS--PRORATED FOR DOUBLE MAJORS		86	88	100	110	120
D- 8. GRADUATE NON-MATRICULANTS						
D- 9. TOTAL GRADUATE STUDENTS		86	88	100	110	120
D-10. TOTAL STUDENTS				163	154	162

DISPLAY V

SCHOOL/DEPARTMENT :

PAGE:
DATE: 11/28/79

SECTION E - DEGREES/CERTIFICATES GRANTED	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
E- 1. BA	70	62	31	19	18
E- 2. BS					
E- 3. BT					
E- 4. TOTAL BACHELOR'S	70	62	31	19	18
E- 5. MA	10	19	5	7	14
E- 6. MM					
E- 7. MS					
E- 8. MBA					
E- 9. MAT					
E-10. MST					
E-11. MSED					
E-12. TOTAL MASTER'S	10	19	5	7	14
E-13. PHD	2	2	4	3	5
E-14. CERTIFICATE					

	I. BY DEPARTMENT OF COURSE					II. BY DEPARTMENT OF INSTRUCTOR				
	1974-5	1975-6	1976-7	1977-8	1978-9	1974-5	1975-6	1976-7	1977-8	1978-9
SECTION F - FTE STUDENTS										
F- 1. LOWER DIVISION	132	107	104	134	137			104	122	125
F- 2. UPPER DIVISION	127	113	91	91	121			93	95	126
F- 3. TOTAL UNDERGRADUATE	259	220	195	225	258			197	217	251
F- 4. MASTER'S	33	29	29	29	27			28	29	27
F- 5. DOCTORAL	56	55	69	77	83			69	77	83
F- 6. TOTAL GRADUATE	89	84	98	106	110			97	106	110
F- 7. TOTAL	348	304	293	331	368			295	323	361
F- 8. WEIGHTED TOTAL	468	418	426	476	524			428	468	517
SECTION G - WORKLOAD/COST ANALYSIS										
G- 1. UNIQUE COURSES	33	33	37	38	40					
G- 2. NON-IND STUDY PRIME SEC	37	35	35	34	37				33	37
G- 3. NON-IND STUDY SUB-SEC			26	23	29				23	32
G- 4. THESES/DISSERTATIONS	12	20	30	31	42				30	41
G- 5. OTHER INDEPENDENT STUDY			74	54	54				57	55
G- 6. NON-IND STUDY SEC /FTEFAC	2	1.8	3.1	3.1	3.3				3.1	3.4
G- 7. THESES/DISS/FTEFAC	.7	1	1	1.7	2.1				1.6	2
G- 8. OTHER IND STUDY/FTEFAC			3.8	3	2.7				3.1	2.7
G- 9. WFCOH EX IND ST /FTEFAC			5.7	5.4	5.9				7	6.1
G-10. WFCOH IN IND ST /FTEFAC	14.3	10.5	10.3	11.2	11.4				12.3	11.6
G-11. STUDENT/FACULTY RATIO	19.1	15.3	15	18.2	18.2			15.1	17.7	17.8
G-12. WTD STUDENT/FACULTY RATIO	25.7	21	21.8	26.2	25.9			21.9	25.7	25.8
G-13. | $ DR COST/FTESTU	$ 1,166	1,519	1,628	1,507	1,499			1,617	1,544	1,528
G-14. | $ DR COST/WTD FTESTU	$ 867	1,104	1,120	1,048	1,053			1,115	1,065	1,066
G-15. AV CLASS SIZE EX IND STUDY										

DISPLAY V
CONTINUED

FACULTY LINE GENERATION FROM INSTRUCTIONAL WORKLOAD: ONE VIEW OF PRODUCTIVITY

Michael F. Middaugh
State University of New York at New Paltz

Introduction

The purpose of this paper is to describe the process through with the College at New Paltz duplicates the New York State Division of the Budget's use of the Course and Section Analysis (CASA) data base in estimating faculty line generation from instructional workload. Prior to Fall 1979, the College had traditionally estimated faculty line production by dividing student FTEs in a given course by a standard student faculty ratio of 18 to 1, regardless of level of instruction or academic discipline. In other words, a professor teaching seminars in Nuclear Physics to graduate students was expected to carry the same instructional load as his or her colleague teaching introductory literature to college freshmen. During the Fall 1979 semester, it came to our attention that the Division of the Budget measures faculty productivity quite differently. Moreover, the productivity measures arrived at through the Division of the Budget methodology serve as the basis for instructional resource allocations within the Executive Budget. Consequently, while we retain philosophical differences with the Division of the Budget over certain aspects of their productivity estimation methodology, we have nonetheless elected to mimic it, as it is, so to speak, "the coin of the realm". Specificially, it puts us on the same conceptual footing as the Division of the Budget and enables us to forecast our instructional line requirements on the same basis as those who will ultimately fund those lines.

Conceptual Framework

The current New Paltz methodology for estimating faculty line generation from instructional workload is a duplicate of the methodology employed by the Division of the Budget. Unlike its predecessor, which divided student FTEs by a constant student faculty ratio of 18 to 1, the current methodology is sensitive to both the level of instruction for a course and the academic discipline into which the course falls.

In order to achieve this sensitivity, the Division of the Budget created a 40 cell matrix of student faculty ratios which evolves from a match between level of instruction and the ten HEGIS discipline categories appropriate to four year colleges of arts and sciences. For purposes of extended internal analyses, the College at New Paltz has expanded the matrix to 70 cells. Thus, one dimension of the matrix identifies seven levels of instruction: 1) Lower Division, 2) Upper Division, 3) Beginning Graduate, 4) Advanced Graduate, 5) Undergraduate, 6) Graduate, and 7) All Courses. These levels are matched against ten HEGIS discipline categories: a) Biological and Health Sciences, b) Business and Management, c) Education, d) Fine and Applied Arts, e) Language and Letters, f) Mathematics and Computer Science, g) Physical Sciences and Engineering, h) Psychology, i) Social Sciences, and j) Other. The cells of the matrix are then filled with data generated from Statistical Abstracts, published annually by Central Administration.

Specifically, the cells are filled with the average student faculty ratio for all four year colleges of arts and sciences within each HEGIS discipline category at each level of instruction. This type of data is found in the Statistical Abstracts under the section titled "Selected Cost Factors by Discipline Categories and Course Level". It is important to note, however, that this methodology does not employ only the student faculty ratio from a single year of Statistical Abstracts. Rather, the student faculty ratios employed in this methodology are running weighted averages based upon data from the three most recent volumes of Statistical Abstracts. For example, the formula for the Fall 1980 ratios in use at New Paltz is:

$$\text{Student Faculty Ratio in each Hegis Discipline Category at each Level of Instruction} = \frac{(1979 \text{ data} \times 3) + (1978 \text{ data} \times 2) + (1977 \text{ data} \times 1)}{6}$$

The purpose of a running weighted average is to minimize the impact of any single year's data, should that data be something of an aberration. A detailed discussion of the weighting system as well as the matrix are found in Table 1[a] and 1[b].

The overall methodology for computing faculty line generation is executed on a course by course basis, and proceeds along the following steps:

1. Student Credit Hours (SCRH), which are the product of the course credit value multiplied by the course enrollment, are converted into student FTEs. This is achieved by dividing undergraduate SCRH by 15 and graduate SCRH by 12. While Central Administration computes advanced graduate student FTEs in a different manner, we have elected to treat our advanced graduate students, which are not doctoral students, in the same manner as all other graduate students for purposes of internal workload analyses.

2. Student FTEs within a given course are then divided by the appropriate student faculty ratio from the 70 cell matrix. For purposes of developing data comparable to the Division of the Budget, ratios are selected from a 40 cell matrix developed by matching lower division, upper division, beginning graduate, and advanced graduate levels of instruction with each of the ten HEGIS discipline categories. For purposes of local analyses, the levels can be expanded to include undergraduate, graduate, and all courses, thereby producing the 70 cell matrix. The level of instruction at New Paltz is keyed to the third digit of a five-digit course number, i.e., 0,1,2 = lower division; 3,4 = upper division; 0,1,2,3,4, = undergraduate; 5,6,7 = graduate. Placement of the course within a specific HEGIS discipline category is governed by the HEGIS code assigned to the course within the CASA data base.

The student faculty ratios that will be used in calculating faculty lines generated during the Fall 1980 and Spring 1981 semesters are a three-year running preweighted average of the actual student faculty ratios for Fall 1977, Fall 1978, and Fall 1979, as reported in Statistical Abstracts, published by SUNY Central. This report displays, by HEGIS discipline category and level of instruction, both the weighted student faculty ratios and the actual ratios from which they were calculated.

For a full discussion of the methodology for calculating "faculty lines generated", and for a full explanation of the rationale used in developing SUNY-wide four year college student faculty ratios, the reader is directed to the following Institutional Research reports: Faculty Lines Generated by Department by Division by Total College and Trends in Average Student Faculty Ratios for SUNY Four-Year Colleges by HEGIS Discipline Category by Level of Instruction. Copies of these reports have been distributed to all deans and department chairpersons. Additional copies are on file in the Office of Institutional Research.

Table 1[a].

	Actual Fall 1977	Actual Fall 1978	Actual Fall 1979	3 Year weighted Average
Biological & Health Sciences				
Undergraduate	19.04	18.33	18.24	18.54
Lower Division	31.96	29.83	30.68	30.61
Upper Division	15.43	13.69	13.95	13.61
Graduate	8.31	8.07	7.14	7.66
Beginning Grad	8.31	8.07	7.14	7.66
Advanced Grad	na	na	na	na
Total	18.77	17.28	17.05	17.41
Business Administration				
Undergraduate	29.64	29.26	29.71	29.55
Lower Division	38.52	42.95	42.39	41.70
Upper Division	27.25	25.52	26.13	26.11
Graduate	na	na	na	na
Beginning Grad	na	na	na	na
Advanced Grad	na	na	na	na
Total	29.35	29.30	29.85	29.58
Education				
Undergraduate	16.88	16.57	16.18	16.41
Lower Division	15.13	14.98	16.03	15.34
Upper Division	17.16	16.88	16.21	16.59
Graduate	16.46	15.55	13.99	14.92
Beginning Grad	16.27	15.10	13.45	14.47
Advanced Grad	21.77	21.00	23.50	22.38
Total	16.67	16.32	15.61	16.02
Fine & Applied Arts				
Undergraduate	14.47	14.34	14.05	14.22
Lower Division	18.40	18.36	17.80	18.03
Upper Division	10.63	10.23	10.04	10.20
Graduate	11.36	11.29	9.58	10.45
Beginning Grad	11.36	10.94	10.63	10.86
Advanced Grad	na	na	na	na
Total	14.33	14.22	13.88	14.07
Language & Letters				
Undergraduate	19.25	18.79	19.02	18.98
Lower Division	21.67	20.76	21.41	21.24
Upper Division	16.04	15.88	15.31	15.62
Graduate	8.70	8.17	7.80	8.09
Beginning Grad	8.70	8.17	8.00	8.19
Advanced Grad	na	na	na	na
Total	18.02	18.34	18.61	18.56
Mathematics & Computer Science				
Undergraduate	22.41	23.40	23.30	23.19
Lower Division	26.72	27.46	27.27	27.24
Upper Division	14.93	15.62	15.00	15.20
Graduate	7.70	7.06	7.00	7.42
Beginning Grad	7.70	7.06	7.00	7.42
Advanced Grad	na	na	na	na
Total	21.87	22.73	22.77	22.61
Physical Sciences				
Undergraduate	19.19	19.40	18.24	19.09
Lower Division	25.55	25.72	24.05	24.86
Upper Division	12.25	12.80	11.71	12.16
Graduate	6.40	6.64	6.30	6.43
Beginning Grad	6.40	6.55	6.30	6.40
Advanced Grad	na	na	na	na
Total	18.66	18.81	17.76	18.36
Psychology				
Undergraduate	26.21	25.53	24.40	25.10
Lower Division	40.43	41.60	39.23	40.22
Upper Division	19.36	18.49	17.26	18.02
Graduate	11.27	9.70	8.14	9.10
Beginning Grad	11.14	9.37	8.74	9.35
Advanced Grad	na	na	na	na
Total	24.50	23.72	22.43	23.21
Social Sciences				
Undergraduate	21.11	21.70	20.91	21.21
Lower Division	25.99	28.55	25.27	26.40
Upper Division	17.94	17.84	17.46	17.40
Graduate	10.64	12.40	10.14	11.08
Beginning Grad	10.64	12.48	10.48	11.17
Advanced Grad	na	na	na	na
Total	20173	21.30	20.57	20.87
Other				
Undergraduate	17.56	17.14	17.94	17.61
Lower Division	17.83	17.48	18.62	18.01
Upper Division	17.24	16.67	17.22	17.04
Graduate	11.91	8.75	9.58	9.69
Beginning Grad	11.91	8.75	9.58	9.69
Advanced Grad	na	na	na	na
All Disciplines				
Undergraduate	19.20	19.17	18.98	19.09
Lower Division	23.52	23.66	23.22	23.42
Upper Division	16.35	15.78	15.30	15.74
Graduate	13.10	12.58	11.39	12.09
Beginning Grad	12.74	12.25	11.14	11.96
Advanced Grad	22.43	19.21	15.65	17.96
Total	18.76	18.61	18.35	18.51

Table 1^b. Average Student Faculty Ratios for SUNY 4-Year Colleges by HEGIS Discipline Category and Level of Institution: for Use in 1980-81 FLG Calculations.

3. The quotient from the division of student FTEs in a course by the appropriate HEGIS divisor for that course represents the portion of one faculty line generated by the instructional workload in that course. The data can then be summed by instructor to indicate the portion of a full faculty line generated by each instructor's workload. Or, the data can be summed by academic department to show the departmental line production. The arraying of the data has several variations depending upon intended use. Certain of these variations will be discussed elsewhere in this paper.

Computerizing the Workload Reports

The College at New Paltz uses the CASA data base, augmented with Reporter vocabulary programs, to produce reports describing faculty line generation from instructional workload. Locally, four programs, CSAP30, CSAP31, CSAP32, and CSAP33 have been developed to report on faculty productivity. Each program is described below:

a. CSAP30 - All reports on faculty workload using the Reporter vocabulary require either disk or card input of 10 X 7 (70 cell) matrix of student faculty ratios. It was assumed that a particular matrix would be set up and used for the year of reporting in which the matrix was applicable. In this case, the matrix is stored on disk and all programs would, by default, use this matrix. However, in order to permit the input of different matrices, card input is also permitted. This is done by requesting the report CSAP30 executed with option 1 set = 1 and submitting the card deck with the job. To build a disk matrix file, CSAP30 should be executed with the card matrix file as input. This will create a disk file CSAMAJ for future reports. Only one matrix may reside on disk at any one time.

The card format for the matrix card deck is numbered as follows:

Columns 1-2	HEGIS discipline code number (01 to 10, as numbered in Statistical Abstracts)
Columns 3-7	Undergraduate student faculty ratio for that HEGIS category
Columns 8-12	Lower division student faculty ratio for that HEGIS category
Columns 13-17	Upper division student faculty ratio for that HEGIS category
Columns 18-22	Graduate student faculty ratio for that HEGIS category
Columns 23-27	Beginning graduate student faculty ratio for that HEGIS category
Columns 28-32	Advanced graduate student faculty ratio for that HEGIS category
Columns 33-37	Total student faculty ratio for all courses within that HEGIS category

Each student faculty ratio has a three digit integer field and a two digit decimal field.

b. CSAP31 "Faculty Lines Generated: Alphabetized Instructor Roster" - for each instructor, a full listing of courses taught by that individual, as well as SCRH and FTEs for each course, is printed with three workload measures:

FLG 1 - Identical to Division of the Budget; is sensitive to lower division, upper division, beginning graduate, and advanced graduate levels of instruction within each HEGIS category.

FLG 2 - Sensitive only to total undergraduate and total gradaute student faculty ratios.

FLG 3 - Sensitive only to the total student faculty ratio for all courses within a particular HEGIS category.

Thus, three measures of faculty line generation, each with a different level of sensitivity to the mechanics of instructional workload analyses, are produced for each course taught by each instructor. Moreover, the data for SCRH, FTEs, and each of the FLG measures are summed for each instructor. The instructor roster is arranged alphabetically. (See specimen in Table 2).

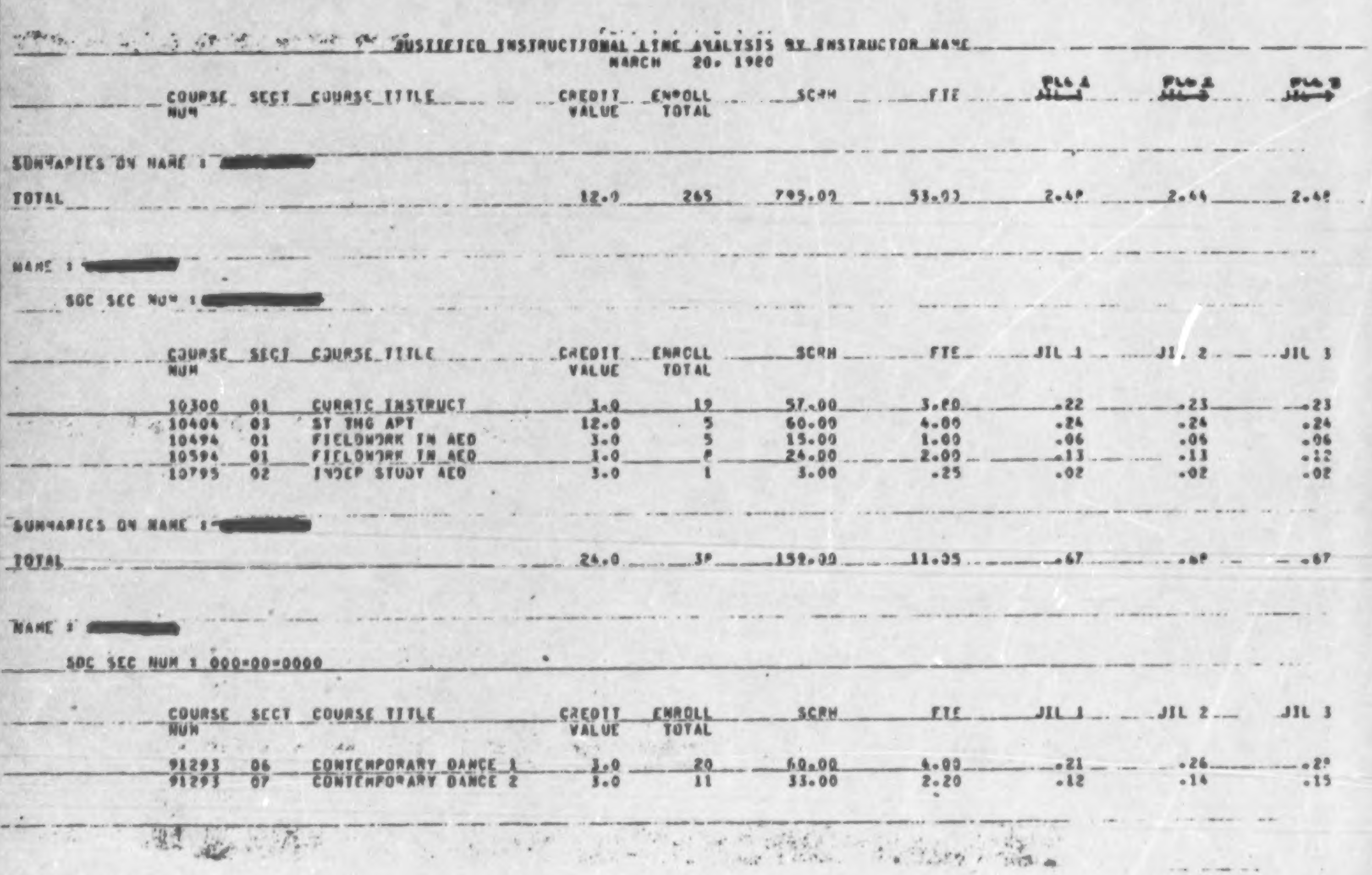
c. CSAP32 "Faculty Line Generation: By Alphabetized Instructor, by Department, by HEGIS Discipline Category" - This report generates the same type of data as CSAP31, but arrays it by alphabetized instructor list within academic departments offering courses within each of the HEGIS disciplines. In addition to individual course data, summaries are provided for instructors, departments, and the discipline within each of the HEGIS discipline categories. (See specimen in Table 3).

d. CSAP33 "Faculty Line Generation: By Alphabetized Instructor, by Department" - This report generates the same type of data as CSAP31, but arrays it by alphabetized instructor list within each academic department. In addition to individual course data, summaries are provided for instructors and the total department. (See specimen in Table 4).

Copies of the program tapes for CSAP30, CSAP31, CSAP32, and CSAP33 are available on loan from the New Paltz Office of Institutional Research to other SUNY units with compatible computer hardware (i.e., Burroughs 6800).

Using the Data

The underlying philosophy at New Paltz in using the data from the faculty line generation reports is that they represent a reasonably accurate portrait of this institution as viewed by resource allocators within



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                          JUSTIFIED INSTRUCTIONAL LINE ANALYSIS BY INSTRUCTOR NAME
                                            MARCH   20, 1980

          COURSE  SECT  COURSE TITLE            CREDIT   ENROLL        SCRH        FTE     JIL 1      JIL 2      JIL 3
          NUM                                   VALUE    TOTAL

SUMMARIES ON NAME : [redacted]

TOTAL                                            12.0      265       795.00      53.00      2.48       2.44       2.48

NAME : [redacted]

      SOC SEC NUM : [redacted]

          COURSE  SECT  COURSE TITLE            CREDIT   ENROLL        SCRH        FTE     JIL 1      JIL 2      JIL 3
          NUM                                   VALUE    TOTAL

          10300   01    CURRIC INSTRUCT           3.0       19        57.00       3.80      .22        .23        .23
          10404   03    ST TNG APT               12.0        5        60.00       4.00      .24        .24        .24
          10494   01    FIELDWORK IN AED          3.0        5        15.00       1.00      .06        .06        .06
          10594   01    FIELDWORK IN AED          3.0        8        24.00       2.00      .13        .13        .12
          10795   02    INDEP STUDY AED           3.0        1         3.00        .25      .02        .02        .02

SUMMARIES ON NAME : [redacted]

TOTAL                                            24.0       38       159.00      11.05      .67        .68        .67

NAME : [redacted]

      SOC SEC NUM : 000-00-0000

          COURSE  SECT  COURSE TITLE            CREDIT   ENROLL        SCRH        FTE     JIL 1      JIL 2      JIL 3
          NUM                                   VALUE    TOTAL

          91293   06    CONTEMPORARY DANCE 1      3.0       20        60.00       4.00      .21        .26        .28
          91293   07    CONTEMPORARY DANCE 2      3.0       11        33.00       2.20      .12        .14        .15
```

Table 2.

Specimen Page from CSAP31:
Faculty Line Generation
by Alphabetized Instructor Roster

```
                                   CASA SYSTEM

                                 REPORT ID: CSAP32
                    FACULTY LINES GENERATED BY DISCIPLINE/DEPARTMENT
                                  MARCH   19, 1980

NAME : [redacted]

     SSN : [redacted]

          COURSE  SECT  COURSE TITLE          CREDIT  ENROLL     SCRH      FTE     FLG-1     FLG-2     FLG-3
          NUM                                 VALUE   TOTAL

          90319   01    ANAT PHYS SPEECH        3.0      41    123.00     8.20      .56       .43       .45
          90403   02    CLINICAL METHOD         2.0      28     56.00     3.73      .26       .20       .21
          90417   01    AUDIOLOGY               3.0      27     81.00     5.40      .37       .28       .30

 SUMMARIES ON NAME : [redacted]

 TOTAL                                          8.0      96    260.00    17.33     1.19       .91       .96

 SUMMARIES ON DEPARTMENT : SPEECH

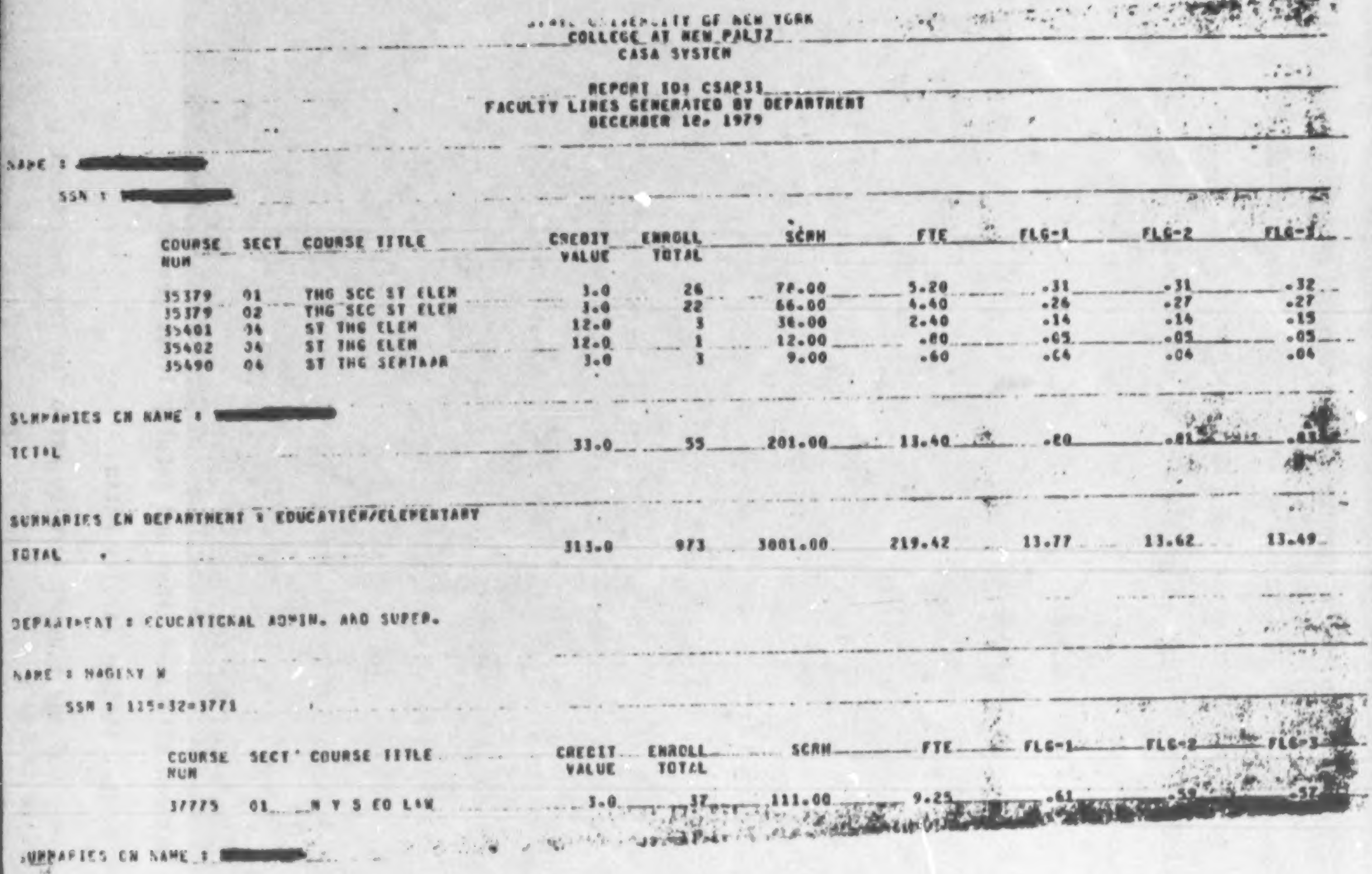
 TOTAL                                         11.0     123    341.00    22.73     1.56      1.19      1.24

 SUMMARIES ON DISCIPLINE : BIOLOGICAL AND HEALTH SCIENCES

 TOTAL                                        283.0    1759   4524.00   305.57    16.83     17.38     16.91
```

Table 3.

Specimen Page from CSAP32:
Faculty Lines Generated by Instructor
by Department, by HEGIS Discipline Category



```
                              STATE UNIVERSITY OF NEW YORK
                                COLLEGE AT NEW PALTZ
                                    CASA SYSTEM

                                REPORT ID: CSAP33
                       FACULTY LINES GENERATED BY DEPARTMENT
                                DECEMBER 10, 1979

NAME : [redacted]

    SSN : [redacted]

        COURSE  SECT  COURSE TITLE          CREDIT   ENROLL       SCRH        FTE      FLG-1      FLG-2      FLG-3
        NUM                                 VALUE    TOTAL

        35379   01    THG SCC ST ELEM         3.0      26        78.00       5.20       .31        .31        .32
        35379   02    THG SEC ST ELEM         3.0      22        66.00       4.40       .26        .27        .27
        35401   34    ST THG ELEM            12.0       3        36.00       2.40       .14        .14        .15
        35402   34    ST THG ELEM            12.0       1        12.00        .80       .05        .05        .05
        35490   04    ST THG SEMINAR          3.0       3         9.00        .60       .04        .04        .04

SUMMARIES ON NAME : [redacted]

TOTAL                                        33.0      55       201.00      13.40       .80        .81        .83

SUMMARIES ON DEPARTMENT : EDUCATION/ELEMENTARY

TOTAL                                       313.0     973      3001.00     219.42     13.77      13.62      13.49

DEPARTMENT : EDUCATIONAL ADMIN. AND SUPER.

NAME : NAGISY W

    SSN : 115-32-3771

        COURSE  SECT  COURSE TITLE          CREDIT   ENROLL       SCRH        FTE      FLG-1      FLG-2      FLG-3
        NUM                                 VALUE    TOTAL

        37775   01    N Y S ED LAW            3.0      37       111.00       9.25       .61        .59        .57

SUMMARIES ON NAME : [redacted]
```

Table 4.

Specimen Page From CSAP33:
Faculty Lines Generated,
by Instructor, by Department

the Division of the Budget. Two caveats are always operational in approaching the data, however. First, these reports are by no means the only indicator of faculty productivity used in making resource reallocation decisions. While faculty line generation is certainly a good indicator of the intensity of instructional activity, other indicators such as significant research, publications, non-teaching responsibilities, etc. must be considered. The second caveat evolves from the first. Faculty line generation is a useful way of viewing the total college productivity picture, or even that of a department. It is not an appropriate tool for serving as the sole measure of individual productivity precisely because it cannot address the kinds of non-instructional productivity described above. Within the context of those caveats, however, the faculty line generation reports have emerged as useful policy-shaping tools at the College at New Paltz.

An example of this utility is evident in the Instructional Workload Summary Report, developed by the New Paltz Office of Institutional Research, and a sample from which is found in Table 5). The report gives a six year summary of fall semesters (in this case, Fall 1974 through Fall 1979), with the following elements summarized for each academic department, College division, and the total College:

a. Student Credit Hours, as reported in the official CASA

b. Student FTEs, as reported in the official CASA

c. Faculty Line Generation (using the DOB 40 cell option)

d. Lines officially allocated to the department

e. Difference between allocated lines and faculty lines generated

f. Actual departmental student faculty ratio

g. SUNY wide 4-year College student faculty ratio for the department's HEGIS discipline category

h. Degrees Granted

i. Declared Majors

Division or Department:	1974	1975	1976	1977	1978	1979
Student Credit Hours (SCRH)	2448	2902	3884	4055	4210	5738
Student FTE	163.74	193.46	259.07	270.60	281.02	382.0
Faculty Lines Generated by Level (FLG)	8.3	8.7	10.6	12.4	13.2	14.1
Allocated Lines	6.00	6.00	6.00	8.00	8.00	11.00
Lines - FLG	- 2.3	- 2.7	- 4.6	- 4.4	- 5.2	- 3.1
Actual S/F Ratio	27.25	32.25	43.18	33.85	35.13	34.72
SUNY-Wide 4 year college S/F ratio for hegis discipline	20.67	22.26	22.26	20.73	21.38	21.31
Degrees Granted July 1 - June 30	47	39	31	42	51	65
Declared Majors T	97	131	127	119	131	
UG	97	131	127	119	131	
G	-	-	-	-	-	

Table 5.

Specimen Page from New Paltz's
Instructional Workload Summary Report

Using the summary data, we have been able to:

1. Simulate credit hours and FTEs through 1985
2. Simulate student faculty ratios, by level of instruction, through 1985
3. Simulate faculty line generation through 1985
4. Simulate scenarios hypothesizing departments with the greatest liklihood of a major shortfall in making faculty line generation match actual departmental allocations.

The impact of such data on the quality of our budget proposals has been significant.

Other uses of the data are possible for policy decisions which govern the redistribution of existing faculty resources. Those departments whose faculty line generation fall furthest below and furthest above actual departmental allocations are viewed as prime candidates for realignment in instructional resources.

Summary

While individuals on campus have been restrained in their enthusiasm over the methodology for estimating workload productivity as described in this paper, there is wide acceptance of the reality that this methodology is used by the Division of the Budget in making resource allocation decisions. Consequently, faculty and administrators alike have expressed the desire to learn more about the methodology, to understand its mechanics, and to work within its context in developing long range plans with respect to instructional resources. That the methodology is a fact of life is accepted, and the College Community has been fully supportive of this Office's effort to trade in the same currency as decision makers within the Division of the Budget.

. DEVELOP an understanding of scientific and technological concepts, and an awareness of the effects of science and technology in society.

. FAMILIARIZE students with the various "modes of inquiry" which have been found useful in comprehending our universe.

. PROVIDE students with an understanding of the nature of aesthetic perception, and awareness of the significance of creative and aesthetic dimensions of their own experiences, which they can compare and relate to other cultures.

. DEVELOP in the students the capacity to think critically and creatively about the moral values and ethical implications of their own behavior and the behavior of others.

. PROVIDE opportunities for students to explore a variety of fields, and varieties of work environments in a field, preparatory to making an occupational commitment.

. PROVIDE OPPORTUNITIES and develop self-learning ability, including ability to set personal educational goals, create independent learning situations, and locate resources.

. PROVIDE STUDENTS with the opportunity to obtain knowledge and develop skills contributing to the satisfying enjoyment of leisure and avocational activities.

. DEVELOP in students the ability to think clearly, and use effectively the English language in speech and writing.

. DEVELOP MATHEMATICAL skills.

. DEVELOP PROFESSIONAL/technical/scientific knowledge and skills in a specialized area.

At a time in the history of education when many institutions are struggling to define their purpose, it is a major accomplishment to be able to state, specifically, RIT's aspirations for its students. But it was necessary to go beyond mere statement of goals.

ROCHESTER INSTITUTE OF TECHNOLOGY

EDUCATIONAL GOALS PROJECT

Table 1. LINK OF DATA SOURCES TO GOALS UNDER STUDY

GOAL	DATA SOURCES										
	COMP RESULTS	RIT QUESTIONNAIRE	MARKETING STUDY	GENERAL EDUCATION CURRICULUM STUDY	TSWE	FRESHMAN MATH TEST (ETS)	COLLEGE BOARD SAT SCORES	DIAGNOSTIC OBSERVATION SYSTEM	ENTERING STUDENT QUESTIONNAIRE	ALUMNI STUDY	FACULTY GOALS PERCEPTION
STANDARD OF EXCELLENCE			X	X					X	X	X
SCIENCE & TECHNOLOGY	X			X					X		X
MODES OF INQUIRY	X		X	X				X	X	X	X
AESTHETIC PERCEPTION	X		X	X					X	X	X
MORALITY AND ETHICAL VALUES	X		X	X							X
CAREER EXPLORATION OPPORTUNITIES		X	X	X					X	X	X
SELF-LEARNING ABILITY		X	X	X				X	X	X	X
LEISURE AND AVOCATIONAL ACTIVITIES		X		X					X	X	X
EFFECTIVE USE OF SPEECH & WRITING	X		X		X		X	X		X	X
MATHEMATICAL SKILLS				X		X	X			X	X
SPECIALIZED PROF. SKILL DEVELOPMENT											

The Policy Council, in adopting this set of educational goals, indicated that the Provost and Deans Committee should conduct further studies, and, in particular, should implement efforts to further the goals. They charged the Deans with the responsibility for responding to the following questions: What do we know about the goals? Can we specify the degree to which they are being accomplished? Do we know what activities in our classes and programs and extra-curriculum support these outcomes? Are there standards by which we can judge the student's successful achievement of the goals?

These questions led to an extended process, beginning early in 1979, of information collection. The process involved assessing faculty perceptions about the activities that occur in their classrooms and programs that help students achieve the goals. Faculty also reported on activities that would increase the likelihood of students attaining the goals. Direct assessment of student outcomes was measured using the College Outcome Measures Project (COMP), developed by the American College Testing Program (ACT). A variety of other sources of data were organized to provide additional information on the accomplishment of the goals.

Various offices on the RIT campus have either conducted or contracted for studies of faculty, students, or alumni during the past five years. The purposes of these studies ranged from marketing to curriculum revisions to instructional means. None of the studies conducted were aimed solely at institutional goals. However, each asked questions and gathered data on items which were directly related to outcomes factors. The resource team working with the goal review panels combed the various instruments and studies for information which would be of value as a means of assessing students' needs, desires, perceptions, and performances on the adopted goals.

At this point, the instruments and data sources used by the resource team will be described. The information was assembled into data binders and distributed to all members of the

Goal Review Panels. The names of persons to contact for further information or explanation were included. It was desired that the Panels be aware of all the data currently available and thus be encouraged to explore and question. Appendix A presents a matrix of the goals and the instruments used in assessment.

The following is a description of the data sources used as resources for the Goal Review Panels.

a. COMP Results: College Outcomes Measures Project of ACT. The instrument uses a multi media presentation to measure how well students have achieved certain kinds of knowledge and skills, which they are expected to have acquired as a result of their general education experience.(RIT used the two hour Objective Test III). National norms are under development.

b. RIT Questionnaire: An in-house questionnaire administered to those who completed the COMP Test. It was meant to provide an indication of students' perceptions of or participation in three areas of RIT life: career information sources, learning styles, and leisure activity both on and off campus.

c. Marketing Study: A consulting firm and the RIT Admissions office conducted an extensive opinion survey of currently enrolled students, and faculty and administrators. One section inquired about the importance of various factors in their college education. A section of interest included a comparison of faculty and student responses to the importance of educational goals.

d. General Education Curriculum Study: The General Education Models (GEM) Task Force of the College of General Studies conducted several evaluative activities as part of its curriculum evaluation and development plan. These included an Alumni survey, a current

Student Survey, and participation in a student questionnaire prepared by the GEM project consortium. Excerpts were made available to the Goal Review Panels as appropriate.

e. TSWE: Test of Standard Written English used as an indication of language mastery by entering freshmen. It is a standard test with national norms, administered by the College Board.

f. Freshman Math Test(ETS): The ETS Co-operative Algebra I test was administered to entering freshmen. Its use was intended to assess the basic level of math knowledge from which all incoming students could participate.

g. College Board SAT Scores: The results of the math section of the SAT provided a measure of capability in mathematics. By using norms provided, assessment of students' entering levels was done to aid in determining the minimum outcome level.

h. Diagnostic Observation System: Used by the office of Instructional Development. DOS is an instructional evaluation survey based on student responses. Questions deal with courses and teaching methods and effectiveness. Several items related to the goals under review.

i. Entering Student Questionnaire: Conducted annually by the Counseling Center, the ESQ inquires about students' expectations about their college experience in areas ranging from learning styles, goals, behaviors, life style, and self-esteem. Several items corresponded to the goals.

j. Alumni Study: The RIT Institutional Advancement Commission conducted a study of alumni from several classes. The survey focused on employment, influence of RIT on professional and personal life, and contribution of RIT to and importance of several goals drawn from WICHE. Several items were included in the data packs.

k. Faculty Goals Perception: As indicated, a pilot study of the Goal Review process was conducted on two RIT colleges. Faculty of those colleges were asked to state their perceptions of resources available to accomplish the goals, present student achievement of the goals, and suggestions about future activities related to the achievement of goals. Comments were combined by goal, and distributed to each panel chair.

l. Alumni Survey Project: Currently underway, the project will contact approximately 8,000 alumni each year on the basis of their having received RIT degrees 1, 3, 5 or 10 years ago. One question which will be included on all versions of the questionnaire deals with how much importance the alumnus places on the goals adopted by the Institute, and how well those goals have been achieved. (See Table 2) A longitudinal base will be established to monitor changes in these perceptions over time.

As you can see, little primary analysis of the data available was done. The team simply synthesized the information already on campus in various forms. I would say, however, that we were particularly lucky to have recently gone through a sort of state-of-the-Institution assessment. The Institutional Advancement Commission, with which Jim was closely involved, had sponsored a wide-ranging alumni study which covered many of the goals areas. Equally as opportune, the Admissions Marketing Study did quite a bit to highlight the different values of general education objectives held by students and faculty. It also gave valuable information on the perceived strength and weaknesses of RIT as viewed by the students, faculty, and administration. Additionally, some on-going projects had developed enough of a data base to be reliable, particularly in the area of teaching effectiveness.

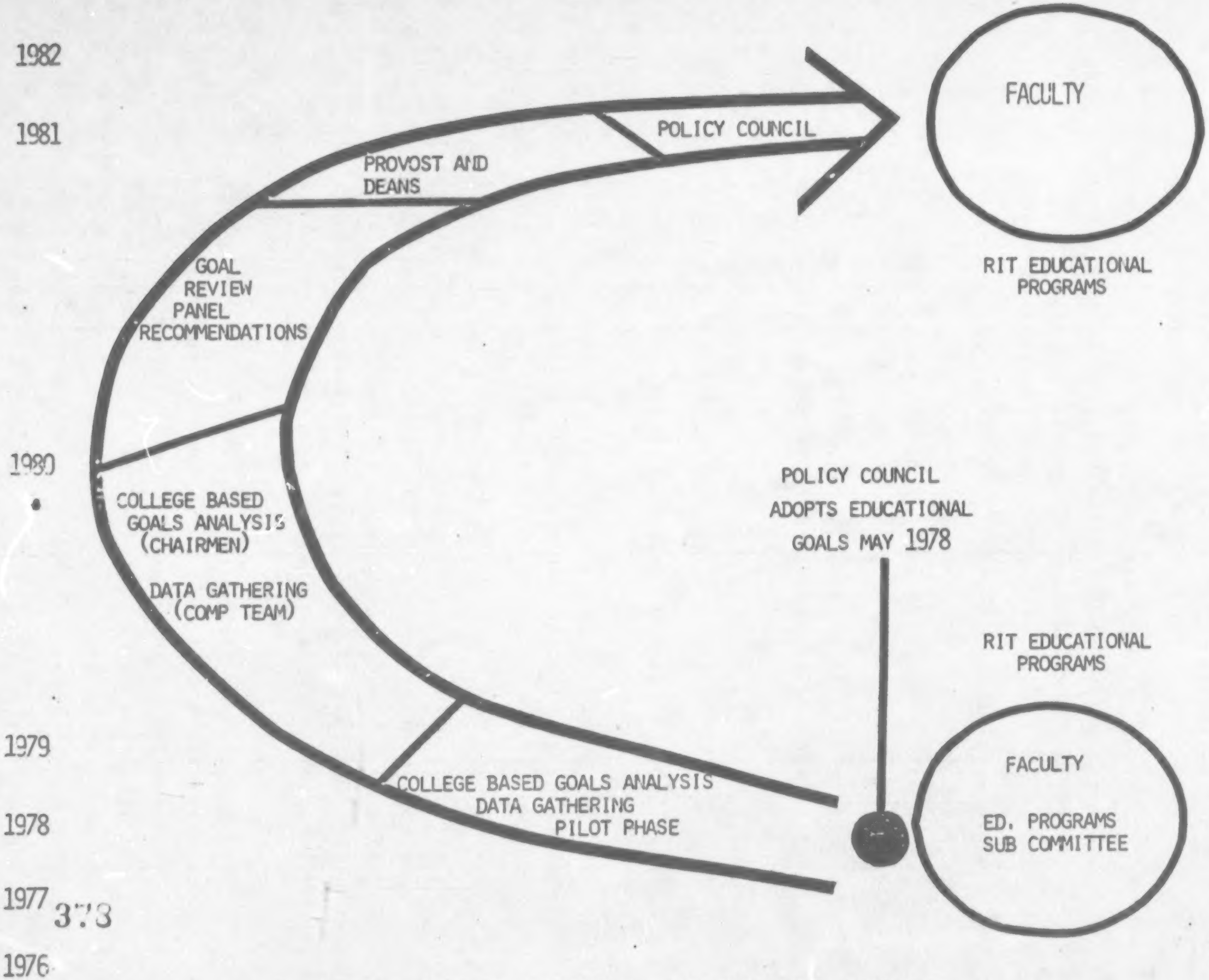
So, we have found that many sources of information existed on our campus. The problem was coordination of the data, and

ROCHESTER INSTITUTE OF TECHNOLOGY
ALUMNI SURVEY PROJECT
CAREER EDUCATION RESEARCH

Table 2.

Listed below are some skills and traits which might characterize people who have been through the RIT experience. We'd be interested in knowing how important you think each of these skills or traits are, and how well you now feel that you achieved them while at the Institute.

	SKILLS AND TRAITS	IMPORTANCE					YOUR ACHIEVEMENTS				
		NOT				VERY	POOR				HIGH
a.	WRITING EFFECTIVELY	1	2	3	4	5	1	2	3	4	5
b.	SPEAKING EFFECTIVELY	1	2	3	4	5	1	2	3	4	5
c.	UNDERSTANDING WRITTEN INFORMATION	1	2	3	4	5	1	2	3	4	5
d.	WORKING INDEPENDENTLY	1	2	3	4	5	1	2	3	4	5
e.	LEARNING ON YOUR OWN	1	2	3	4	5	1	2	3	4	5
f.	UNDERSTANDING GRAPHIC INFORMATION	1	2	3	4	5	1	2	3	4	5
g.	WORKING COOPERATIVELY IN A GROUP	1	2	3	4	5	1	2	3	4	5
h.	HAVING KNOWLEDGE AND SKILLS LEADING TO ENJOYMENT OF LEISURE AND AVOCATIONAL ACTIVITIES	1	2	3	4	5	1	2	3	4	5
i.	ORGANIZING YOUR TIME EFFECTIVELY	1	2	3	4	5	1	2	3	4	5
j.	PLANNING AND CARRYING OUT PROJECTS	1	2	3	4	5	1	2	3	4	5
k.	UNDERSTANDING AND APPLYING MATHEMATICS IN YOUR DAILY LIFE	1	2	3	4	5	1	2	3	4	5
l.	UNDERSTANDING DIFFERENT PHILOSOPHIES AND CULTURES	1	2	3	4	5	1	2	3	4	5
m.	DEFINING AND SOLVING PROBLEMS IN VARIED WAYS	1	2	3	4	5	1	2	3	4	5
n.	UNDERSTANDING THE INTERACTION OF MAN AND THE ENVIRONMENT	1	2	3	4	5	1	2	3	4	5
o.	FAMILIARITY WITH THE IDEALS AND STANDARDS OF EXCELLENCE, CREATIVITY, AND SCHOLARSHIP AS A RESULT OF HAVING PERSONAL OPPORTUNITIES TO ENGAGE IN THESE ACTIVITIES BY ASSOCIATION WITH SCHOLARS AND ARTISTS	1	2	3	4	5	1	2	3	4	5
p.	UNDERSTANDING AND APPRECIATING THE ARTS, AND THE CREATIVE AND AESTHETIC DIMENSIONS OF YOUR OWN EXPERIENCES	1	2	3	4	5	1	2	3	4	5
q.	UNDERSTANDING SCIENTIFIC AND TECHNOLOGICAL CONCEPTS AND THE SOCIAL CONSEQUENCES OF TECHNOLOGY	1	2	3	4	5	1	2	3	4	5
r.	UNDERSTANDING ETHICAL VALUES AND THE POSSIBLE EFFECTS OF YOUR BEHAVIOR ON OTHERS	1	2	3	4	5	1	2	3	4	5
s.	HAVING OPPORTUNITIES TO EXPLORE A VARIETY OF FIELDS AND WORK ENVIRONMENTS PRIOR TO MAKING AN OCCUPATIONAL COMMITMENT	1	2	3	4	5	1	2	3	4	5
t.	DEVELOPING PROFESSIONAL/TECHNICAL/SCIENTIFIC KNOWLEDGE AND SKILLS IN A SPECIALIZED AREA	1	2	3	4	5	1	2	3	4	5


1982
1981
1980
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FACULTY
RIT EDUCATIONAL PROGRAMS
POLICY COUNCIL
PROVOST AND DEANS
GOAL REVIEW PANEL RECOMMENDATIONS
COLLEGE BASED GOALS ANALYSIS (CHAIRMEN)
DATA GATHERING (COMP TEAM)
COLLEGE BASED GOALS ANALYSIS
DATA GATHERING
PILOT PHASE
POLICY COUNCIL ADOPTS EDUCATIONAL GOALS MAY 1978
RIT EDUCATIONAL PROGRAMS
FACULTY
ED. PROGRAMS SUB COMMITTEE

Figure 1. Institutional Goals Project, Rochester Institute of Technology.

meaningful dissemination. I do not, however, feel that the Panels could have functioned effectively without the availability of the appropriate data.

Once faculty input is gathered and student measurement completed, the information will be passed to Goal Review Panels for analysis. The Panels, each chaired by a Dean, will report to the Provost and Deans Committee the level at which each goal is being accomplished, and the program implication of moving from "what is" to "what should be".

The final step will be a review of the findings and recommendations of the Panels by the Provost and Deans Committee. They will decide on questions of resource allocation and actual program implementation. This stage of the process will occur and student progress will continue to determine the effectiveness of the program modification and resource allocation.

Five years of sustained effort has enabled RIT to learn a great deal about its programs and students. The role of broadly-based, outcomes focused Institutional Research has been the key in this educational process. Definition, assessment and program adjustment are only the beginnings of a continuous process that will call upon the skills and expertise of the Institutional Research Practitioners at RIT.

APPENDIX

Program
Thursday, Oct. 30, 1980

Noon - 6:30 p.m.

Registration
(Registration Desk, Third Floor, Conference Center)

1:00 p.m. - 4:00 p.m.

Conference Seminars
(Special, Advance Registration Required, $10; each three-hour seminar limited to 40 persons)

Institutional Self-Study and the Institutional Researcher: What You Need to Know/Rm. 165-169
H.R. Kells
Professor of Higher Education
Rutgers University

Institutional self-study processes required for reaccreditation have become increasingly sophisticated. H.R. Kells has helped develop some of these approaches and currently is the official self-study trainer for both the Middle States and New England regional accrediting associations. Professor Kells will describe necessary information on process design, procedures, recently emphasized elements and intended outcomes of reaccreditation self-study. The focus will be on the institutional researcher's role. Opportunities for limited consultation will be available. Kells is author of the recently released book, *Self-Study Processes: A Guide for Postsecondary Institutions*, published by the American Council on Education.

College Student Attrition and Retention/Rm. 174-176
Robert F. Grose
Director of Institutional Research
Amherst College

This session will examine the conduct and value of cohort analyses, student flow studies and the conceptual views of such writers as Astin, Tinto, Cope and Hannah, and Pantages and Creedon. In addition, the seminar will address such questions as: What are useful definitions of retention and attrition? What is an optimal attrition level? Why is integration of effort critical in retention management and how can it be achieved? Dr. Grose was one of the instructors in a recent series of national workshops on this topic, sponsored by the National Center for Higher Education Management Systems (NCHEMS).

Market Research in Higher Education/Rm. 162-175
Larry H. Litten
Associate Director
Consortium on Financing Higher Education
(In collaboration with personnel from the Boston College Office of Admissions)

This session will focus on market research for existing programs: determining the structure of competition in an institution's market position, student decision-making processes in college selection, information/influence systems, and other market phenomena. Attention also will be given to organizing the research function and to implementing action that effectively utilizes market research. Litten, formerly Coordinator of Institutional Research at Carleton College, has published extensively on this topic, most recently in *Research in Higher Education* and the *Journal of Higher Education*.

4:00 p.m. - 5:00 p.m.

Conference Demonstrations
(Open to all)

The EDUCOM Financial Planning Model (EFPM)
Rm. 163-164
Daniel A. Updegrove
Manager, EFPM Consulting Project, EDUCOM
Princeton, New Jersey

Richard C. Heck
Institutional Planner
Colgate University

Wade Schuette
Cornell Computing
Cornell University

John Goldin
Project Analyst
Office of Institutional Research
Yale University

Many computerized planning models are either too simple, too cumbersome, too expensive, or too specialized to be useful generally. Moreover, most require computer expertise to operate, thus becoming virtual "black boxes" to policy makers. The EFPM is designed to overcome these difficulties by providing a simple modeling language and by offering an institution of any size the flexibility to build its own planning model from the ground up, with its own structure, planning assumptions, and idiosyncracies. Institutions also can define the relevant variables, the relationships among them, and report contents and formats. The potential problem of local computer incompatibility has been solved by making EFPM available over a national dial-in network to a central computer at Cornell University. Mr. Updegrove first directed the design and development of EFPM and now acts as the principal EFPM consultant. He has given presentations on EFPM at numerous national conferences and meetings and has consulted on the model's use at over three-dozen institutions, varying in size and complexity from Marymount Manhattan College to Harvard University.

5:30 p.m. - 6:30 p.m.

Social Hour—Cash Bar
Amherst Room/Rm. 1009

Canapes compliments of the University of Massachusetts, Amherst

6:30 p.m. - 7:45 p.m.

Conference Dinner
Amherst Room

8:00 p.m. - 9:00 p.m.

Opening Address
Rm. 163 Complex

The American University and
Its Publics: A Historian's View
Hugh Hawkins
Professor of History and American Studies
Amherst College

Professor Hawkins is currently writing a general history of American higher education in the twentieth century. His earlier books include a history of Johns Hopkins University, a study of the educational leadership of Charles W. Eliot, and several edited volumes, including one on the emergence of the university and industrial America.

Friday, Oct. 31, 1980

8:00 a.m. - 10:00 a.m.

Registration: 8:00a.m.-10:00a.m.

8:30 a.m. - 10:00 a.m.

Student Choice
Rm. 162-175

Moderator:
Pamela J. Roelfs
University of Connecticut

An Analytical Framework for the Investigation of the Student's College Choice Decision
(8:30 a.m.-8:50 a.m.)
Frederick L. Dembowski
Assistant Professor of Educational Administration
State University of New York at Albany

Messages and Media: Toward Enhanced Performance in Marketing Communications Efforts
(8:55 a.m.-9:15 a.m.)
Larry H. Litten
Associate Director
Consortium on Financing Higher Education

The Decision to Go to College: Its Relationship to Student Value Orientation and Perceived Goal Importance (9:20 a.m.-9:35 a.m.)
Christos Theophilides
Assistant for Institutional Research
State University of New York at Albany

A Systematic Approach to Admissions Yield Analysis—The New Paltz Experience
(9:40 a.m.-10:00 a.m.)
John P. Mandryk
Director of Institutional Research
State University of New York College at New Paltz

Michael F. Middaugh
Assistant Director of Institutional Research
State University of New York College at New Paltz

8:30 a.m. - 9:35 a.m.

Program Evaluation
Rm. 165-169
Moderator:
Michael Sutherland
Hampshire College

Evaluation of Academic Programs: A Practical Model
(8:30 a.m.-8:50 a.m.)
Sigrid Hutcheson
Title XX Training Unit
New York State Office of Mental Health

A Model for Academic Program Evaluation in a Community College (8:55 a.m.-9:15 a.m.)
Debra G. Klinman
Research Associate
Mercer County Community College

Thomas R. Collins
Director of Institutional Research
Mercer County Community College

9:40 a.m. - 10:00 a.m.

Uses of the NCHEMS-CEEB Student Outcomes Questionnaires/Rm. 174-176
Sidney S. Micek
Chairperson, Area of Administrative and Adult Studies, Syracuse University

10:00 a.m. - 10:30 a.m.

Break
(coffee, tea) Rm. 163 Complex

10:30 a.m. - Noon

Panel Discussion
Rm. 162-175

Assessing Quality and Excellence in Higher Education
Paul Wing
Coordinator, Postsecondary Research Information Systems and Institutional Aid
New York State Education Department

Patrick T. Terenzini
Director of Institutional Research
State University of New York at Albany

Edward R. Hines
Assistant Professor of Educational Administration
State University of New York at Albany

Donald Hester
Assistant in Higher Education
New York State Education Department

10:30 a.m.-Noon

Attrition/Retention

Rm. 165-169

Moderator:
Harold O. Bettencourt
U.S. Coast Guard Academy

Student Profiles for Attrition Studies
(10:30 a.m.-10:55 a.m.)
Jean M. Stern
Director of Institutional Planning and Research
Siena College

The Relationship of Academic and Social Integration to College Student Attrition: A Multi-Institutional Study (11:00 a.m.-11:25 a.m.)
David W. Chapman
Assistant Professor of Education
State University of New York at Albany

Russell H. Johnson
University of Michigan

Admissions and Retention: Student Perceptions Before and After Matriculation (11:30 a.m.-Noon)
Robert S. Lay
Program Director, Enrollment Management Research
Boston College

John Maguire
Dean of Admissions, Records and Financial Aid
Boston College

Louise Lonabocker
Admissions, Records and Financial Aid
Boston College

Noon-1:45 p.m.

Conference Luncheon

Amherst Room/Rm. 1009

Long-Range Planning
Dr. Henry Koffler, Chancellor
University of Massachusetts at Amherst

1:45 p.m.-3:20 p.m.

Special Interest Paper Sessions

(Three Tracks)

Track I

Rm. 162-175

Moderator:
Gail Hogan
Ithaca College

Enrollment Planning for the Decade Ahead: An Institutional Methodology (1:45 p.m.-2:05 p.m.)
Edward L. Delaney, Jr.
Director of Institutional Research
Kean College of New Jersey

Design and Application of a Student Environmental Assessment Model for Use in Student Affairs Decision-Making (2:10 p.m.-2:30 p.m.)
James L. Mahon
Assistant Dean of Student Affairs
Bentley College

Thomas H. Zarle
Vice President and Dean of Student Affairs
Bentley College

Beverly A. Joyce
Research Associate
Boston College

Adult Population Pools, Adult Participation Rates, and Projected Adult Credit Enrollment in New York State Colleges (2:35 p.m.-2:55 p.m.)
Eric Braun
Educational Aide, Bureau of Postsecondary Planning
New York State Education Department

Getting Back to Basics: What the Alumni Say
(3:00 p.m.-3:20 p.m.)
Diana M. Green
Director of Institutional Research
and Analytical Studies
State University of New York College at Plattsburgh

Jean V. Morlock
Associate for Institutional Research
State University of New York College at Plattsburgh

Track II

Rm. 165-169

Moderator:
Peter T. Farrago
Boston University

Program Budgeting for Institutional Research
(1:45 p.m.-2:05 p.m.)
Kathleen E. Kopf
Associate for Institutional Research
& Analytical Studies
State Univerity of New York Central Office

The Interrelationship Between Institutional Research and the Budget Development Process
(2:10 p.m.-2:30 p.m.)
Jill F. Campbell
Analytic Studies Assistant
State University of New York College at Brockport

Edward Kumar
Controller
State University of New York College at Brockport

A Financial Feasibility Model for Higher Education
(2:35 p.m.-2:55 p.m.)
Paul Wing
New York State Education Department

Glenwood L. Rowse
New York State Education Department

Cost Study: Review Through Implementation
(3:00 p.m.-3:20 p.m.)
David L. Rumpf
Manager of Planning
University of Massachusetts at Amherst

Track III
Rm. 174–176

Moderator:
C. Matthew Kelly
Frederick Community College

Automating the Fact Book to Create an On-Line Planning Database (1:45 p.m.–2:05 p.m.)
Michael E. Baker
Director of Planning
Carnegie-Mellon University

The Use of Standards and Comparative Space Data for Space Allocation (2:10 p.m.–2:30 p.m.)
Michael E. Baker
Director of Planning
Carnegie-Mellon University

Byron R. Falchetti
Carnegie-Mellon University

Self-Help Financial Aid: A Study of Its Role in Financing Higher Education (2:35 p.m.–2:55 p.m.)
Beverly A. Joyce
Research Associate
Boston College

Elizabeth M. Haran
Senior Research Associate
Public Affairs Research Institute

John P. Joyce
Director of Financial Aid
Lesley College

Position Control: Rationale and Practicability (3:00 p.m.–3:20 p.m.)
Ami Meganathan
Planning Associate
Carnegie-Mellon University

3:20 p.m. - 3:45 p.m.

Break (coffee, tea, soft drinks)
Rm. 163 Complex

3:45 p.m. - 4:40 p.m.

Adult/Continuing Education
Rm. 162–175

Moderator:
Jo Whitney
University of New Hampshire System

A Statewide Approach to the Analysis of the Continuing Education Market (3:45 p.m.–4:10 p.m.)
Eric Brown
Network Administrator
New Hampshire College and University Council

The Nontraditional Student and the State University Colleges: Market or Myth (4:15 p.m.–4:40 p.m.)
Louis M. Spiro
Director of Analytic Studies
State University of New York College at Brockport

Roberta Allis
Analytic Studies Intern
State University of New York at Brockport

3:45 p.m. - 4:40 p.m.

Campus Planning
Rm. 165–169

Moderator:
Jan Napora
University of Massachusetts System

Developing and Effecting an Academic Master Plan (3:45 p.m.–4:10 p.m.)
Thomas M. Edwards
Director of Institutional Research and Planning
Frostburg State College

Master Plan: New Jersey Institute of Technology (4:25 p.m.–4:40 p.m.)
Joseph E. Campbell
Department of Planning and Institutional Research
New Jersey Institute of Technology

3:45 p.m. - 4:40 p.m.

Panel
Rm. 174–176

Protecting Ourselves and Our Clients: Institutional Research and the Protection of Human Subjects Legislation
Nancy Neville
Director of Career Education Research
Rochester Institute of Technology

Jeffrey Cohen
Human Subjects Research Officer
Office for Research
State University of New York at Albany

Barbara McKee
Research Associate
National Technical Institute for the Deaf
Rochester Institute of Technology

4:45 p.m. - 5:30 p.m.

Annual Business Meeting
Rm. 163 Complex

Robert F. Grose, President

5:30 p.m.-

Open Evening

Special Interest Group Meetings Scheduled as Requested

Dinner and Meeting of EDUCOM Financial Planning Model (EFPM) User Group/Rm. 163 Complex

Saturday, Nov. 1, 1980

7:30 a.m.- 9:00 a.m.

Breakfast
Meeting of Old And New Steering Committee
Amherst Room/Rm. 1009

9:00 a.m.- 10:00 a.m.

Community College Presentation
Rm. 162-175

Organizational Development in a Community College: Theory and Practice
Thomas R. Collins
Director of Institutional Research
Mercer County Community College

Debra G. Klinman
Research Associate
Mercer County Community College

Coffee and tea available throughout the morning in Rm. 163 Complex.

9:00 a.m.- 10:30 a.m.

Personnel
Rm. 165-169

Moderator:
Ellen M. Conklin
University of New Hampshire

Effects of Union Exclusion on Intergroup Work Behavior in the Massachusetts State College System (9:00 a.m.-9:25 a.m.)
Anthony F. Ceddia
Executive Vice President
North Adams State College

Methodological Issues in Faculty Salary Comparisons Across Institutions (9:30 a.m.-9:55 a.m.)
Simeon P. Slovacek
Director of Institutional Research
Cornell University

Paige V. Ireland
Cornell University

Triage in Faculty Development: Advice on How to Spend Your Money (10:05 a.m.-10:30 a.m.)
Michael C.T. Brookes
Dean of Faculty
Mount Wachusett
Community College

William Lauroesch
Associate Professor of Adult and Higher Education
University of Massachusetts at Amherst

9:00 a.m.- 11:00 a.m.

Faculty Workload
Rm. 174-176

Moderator:
Tommy Annas
State University of New York Central Office

Summary Indicators of Undergraduate Instructional Resource Utilization: Intra- and Inter-Institutional Comparisons (9:00 a.m.-9:25 a.m.)
Lawrence Kojaku
Director of Institutional Studies
State University of New York at Buffalo

Louis Zrebiec
Institutional Studies
State University
of New York at Buffalo

Two Multilevel Faculty Resource Allocation Models for State University Colleges (9:30 a.m.-9:55 a.m.)
Michael J. Oshier
University Systems Analyst
State University of New York College at Brockport

Louis M. Spiro
Director of Analytic Studies
State University of New York College at Brockport

Ideas on Internal Uses of Faculty Workload Data (10:00 a.m.-11:00 a.m.)
Linda Michaels
Director of Institutional Research
State University of New York College at Oswego

Elizabeth Knapp
Director of Institutional Research
State University of New York at Binghamton

Michael Middaugh
Assistant Director of Institutional Research
State University of New York College at New Paltz

Kathleen Kopf
Institutional Research and Analytical Studies
State University of New York Central Office

Louis M. Spiro
Director of Analytic Studies
State University of New York College at Brockport

10:15 a.m.- 11:20 a.m.

Campus Goals
Rm. 162-175

Moderator:
Edith M. Daly
Hartwick College

Data Utilization for Change Through a Participatory Decision-Making Process (10:15 a.m.-10:45 a.m.)
Nancy L. Goodwin
President
Greenfield Community College

Robert D. DiCarlo
Director of Planning and Sponsored Research
Greenfield Community College

The Educational Goals Implementation Study at Rochester Institute of Technology (10:50 a.m.-11:20 a.m.)
James Speegle
Director of Personnel
Rochester Institute of Technology

Nancy Neville
Director of Career Education Research
Rochester Institute of Technology